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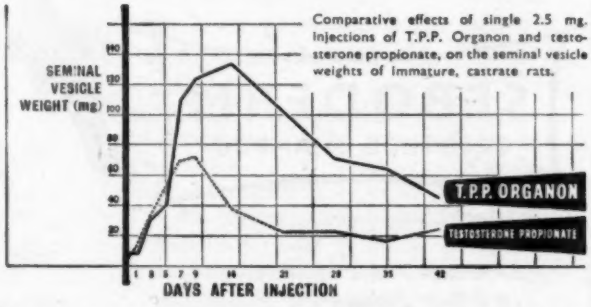

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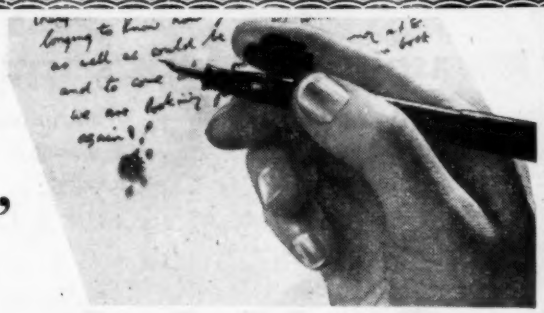

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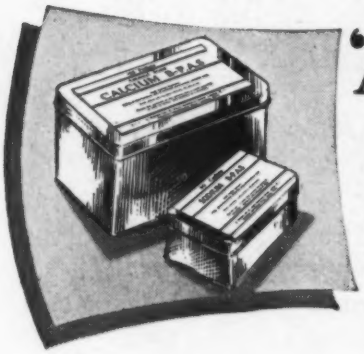

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For hypochromic anaemia in all ages and conditions, particularly in pregnancy, childhood, adolescence and advancing age, Ferraplex B provides easily assimilated iron supplemented, for maximum haematinic effect, with copper, vitamin C and complete vitamin B complex. Side effects such as gastro-intestinal disturbances are rare.

Available in bottles of 50 and 250 tablets.
Basic N.H.S. cost of 250 tablets, 15/6d.
Average daily cost of treatment, 4½d.

The recommended daily dose of six FERRAPLEX B *tablets contains:—*

Ferrous sulphate exsicc., B.P.	1 gramme
Copper carbonate	2 mg.
Ascorbic acid (Vitamin C)	50 mg.
Natural vitamin B complex extract *prepared from Brewers' Yeast and including*	2 grammes
Aneurine hydrochloride	3 mg.
Riboflavine	6 mg.
Nicotinamide	30 mg.

and pantothenic acid, pyridoxine, folic acid, choline, inositol, biotin, para-aminobenzoic acid and other naturally occurring factors of the vitamin B complex.

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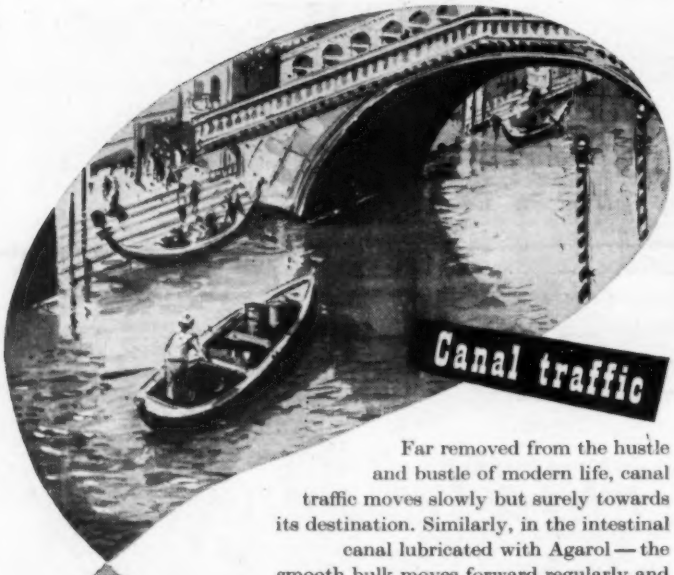

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No Warner preparation has ever been advertised to the public.
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Pain in acid dyspepsia or peptic ulcer responds to the dual action of Neutradonna, in which belladonna for the relief of spasm is combined with aluminium sodium silicate, the ideal buffer-antacid.

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Recent years have brought radical changes in the pattern of anaemia therapy—and many conditions that once pursued a tragically inexorable course have now been mastered. The range of Lederle preparations presented here shows how *complete* is today's anti-anaemia armoury.

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"Master builder" of red cells and haemoglobin. Contains ferrous sulph. exsicc., FOLVITE* Folic Acid, vitamin B_{12}, ascorbic acid, stomach powder, liver fraction, purified intrinsic factor concentrate. Capsules: Bottles of 100 and 1,000.

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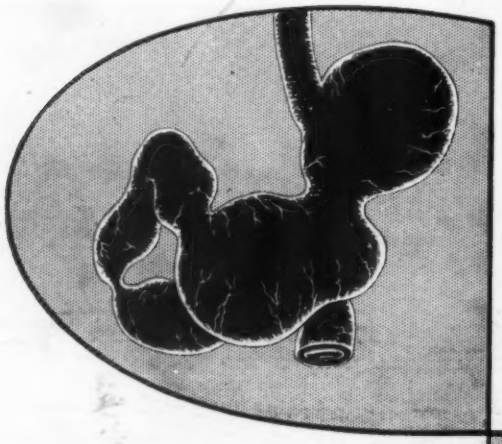

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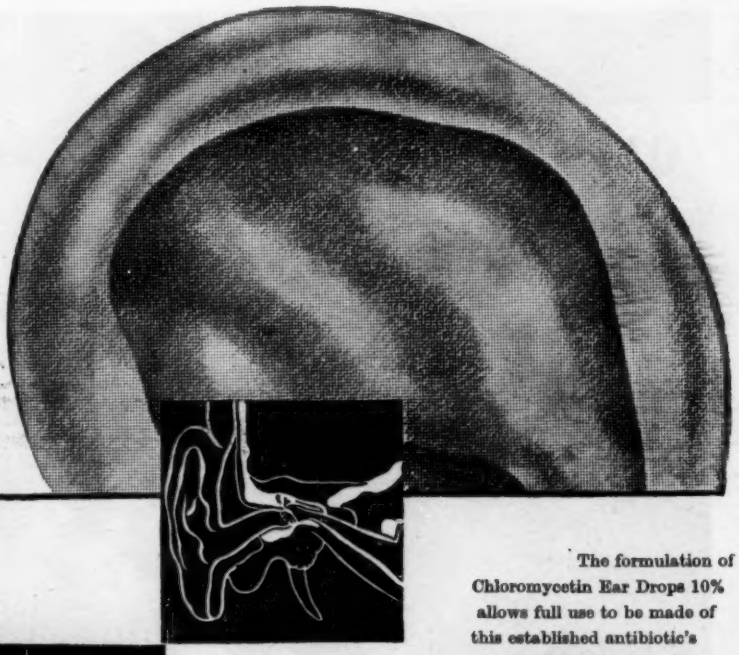

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CHLOROMYCETIN *ear drops* 10%

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REFERENCES:

"Treatment of Chronic Otorrhœa and Chloromycetin"
Brit. Med. J., 2:939, 1951

"Local Application of Chloramphenicol"
Lancet, 2:268, 1951

CHLOROMYCETIN EAR DROPS 10%
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380

THIS WOMAN is in shock. Her blood pressure must be raised swiftly and maintained, now, during any operation which may follow, and in the post-operative period.

A CLEAR CASE FOR DEXTRAVEN the *optimal* fraction dextran.

DEXTRAVEN raises the blood pressure swiftly and surely, and because there is minimum wastage stays in the circulation in significant concentration during the critical 24 hours.

DEXTRAVEN can be given immediately by intravenous infusion. It is stable indefinitely under all climatic conditions—no special storage precautions are necessary. DEXTRAVEN is approved by the Ministry of Health. Fully descriptive literature is available and a Technical Information Service is always at your disposal.

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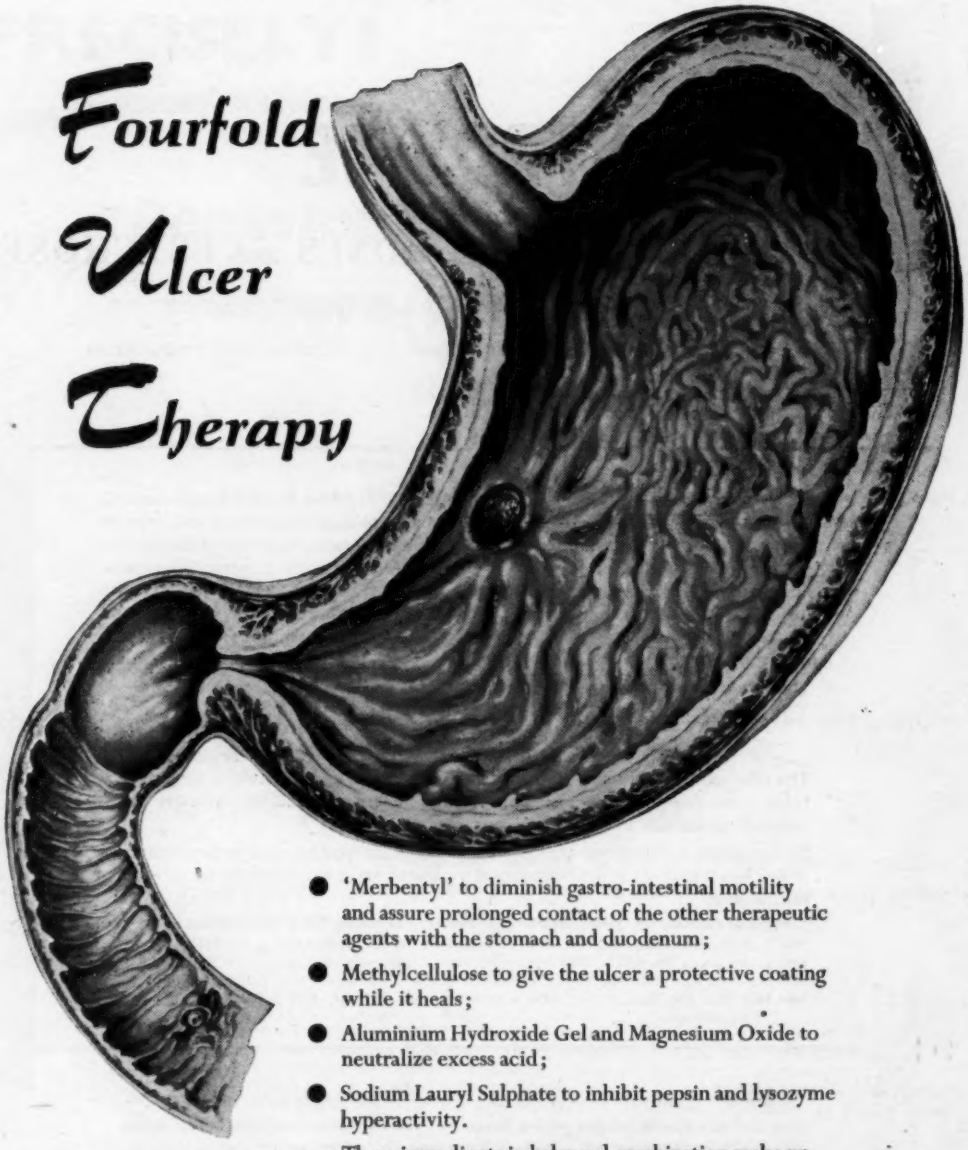
Fourfold Ulcer Therapy



- 'Merbentyl' to diminish gastro-intestinal motility and assure prolonged contact of the other therapeutic agents with the stomach and duodenum;
- Methylcellulose to give the ulcer a protective coating while it heals;
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- Sodium Lauryl Sulphate to inhibit pepsin and lysozyme hyperactivity.

These ingredients in balanced combination make up the new and highly effective peptic ulcer medicament.

Each tablet contains:—

'Merbentyl' (diethylaminocarbethoxybicyclohexyl hydrochloride)	5 mg.
Aluminium Hydroxide Gel	400 mg.
Magnesium Oxide	200 mg.
Sodium Lauryl Sulphate	25 mg.
Methylcellulose	100 mg.

Bottles of 50 and 250 tablets.

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PARENTROVITE

for the treatment of NEUROSES and PSYCHOSES

associated with: | **Drugs** e.g. narcotics and barbiturates
Infections e.g. influenza and pneumonia
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PARENTROVITE consists of injectable preparations of *the vitamin B complex and vitamin C*, designed especially to satisfy the needs created by the toxic effects of drugs and infective agents. The formulae, for intravenous and intramuscular use, have been determined in relation to interactions known to occur between these vitamins in intracellular metabolism. When the enzyme systems concerned in the oxidation of glucose are deranged or inhibited, as they are in certain toxic states, whether caused by virus infections, alcohol or barbiturates, the co-enzymes in the vitamin B group must be supplied in very high concentration to initiate recovery.

The immediate effect of treatment is the restoration of normal cerebral function:—

the return of consciousness after coma or delirium,
rational thinking after confusion,
a co-operative and calm outlook after resistance or depression.

This changed attitude must be maintained by repeated injections while the patient is being given other treatment suitable for the underlying condition, whether this is psychotic or somatic in origin.

High potency preparations are available for both intravenous and intramuscular use to detoxicate patients at the beginning of treatment, and lower potencies for subsequent maintenance.

Some papers indicating the course of developments leading to the introduction of PARENTROVITE.

1944 J. Amer. med. Ass., *126*, 752. 1944 J. ment. Sci., *90*, 95. 1948 Amer. J. Psychiat., 105, 2, 107. 1948 J. nerv. ment. Dis., *110*, 1. 1950 Ann. intern. Med., *32*, 261. 1950 Lancet i, 287. 1951 Lancet ii, 1057, 1951 Brit. med. J., ii, 411. 1952 Amer. J. Psychiat., *108*, 888. 1953 Lancet i, 570. 1953 Med. World, *79*, 579. 1954 Proc. Roy. Soc. Med., *47*, 215. 1954 J. Amer. med. Ass., *155*, 114, 1954 Brit. J. Addict., *51*, 29 & 39.

The following are some of the conditions for which PARENTROVITE *is being found effective:*

Acute alcoholic psychosis, including delirium tremens · Coma or delirium from drugs e.g. barbiturates Collapse after continuous narcosis · Drug withdrawal symptoms · Post-operative confusional psychosis Psychiatric reactions to prolonged ill-health · Toxic syndrome of and sequalae to influenza and pneumonia.

Ampoules are supplied in pairs of 5 c.c. for intravenous injection in acute conditions, and in smaller volumes for intramuscular injection. Boxes of 3 pairs.

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PRECISELY!

'Penavlon' penicillin tablets ensure precision in dosing

'Penavlon' Tablets are supplied in two strengths, 200,000 units and 500,000 units of penicillin respectively, to facilitate the prescribing of convenient dosage schedules.

'Penavlon' can always be relied upon

- **the tablets are uncoated**

  They rapidly disintegrate after ingestion and the penicillin is quickly absorbed.

- **full potency is assured**

  Moisture-free processing during formulation and special packing ensure full potency at the time of dispensing. Storage tests under normal conditions of usage have proved their stability.

'PENAVLON' Penicillin Tablets B.P., contain soluble crystalline penicillin G (potassium salt) of the highest quality and potency. They provide an effective and convenient means of giving penicillin by the mouth and are at the same time the least expensive oral formulation of the antibiotic.

Presentation •
Issued in tablets of 200,000 and 500,000 units penicillin respectively. Tubes of 10 and bottles of 100.
Available under the National Health Service at Ministry of Health Drug Tariff prices.

'Penavlon'
PENICILLIN TABLETS B.P.

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED, WILMSLOW, MANCHESTER

A subsidiary company of Imperial Chemical Industries Ltd.

ICI

Ph.504

In atonic constipation

PURSENNID contains the pure Sennosides A & B of *Cassia angustifolia* in the form of their calcium salts.

PURSENNID taken at bed-time, exerts a gentle but effective laxative action on the following morning.

PURSENNID does not cause griping, cramps or colic owing to the fact that the active compounds are pure glucosides, constant in quality and potency, and the preparation is free from irritant impurities contained in crude senna preparations.

PURSENNID

Tubes of 40 and 200 tablets each containing 12 mg.

Schweiz. med. Wschr., 1941, 71, 1093
Rev. méd. Suisse rom., 1941, 61, 585
Amer. J. dig. Dis., 1945, 12, 221

SANDOZ

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N.P.13
"Megimide"

An Announcement

Recent clinical trials (*Lancet*, 1955, i, 181) have indicated the value of this new compound in the treatment of barbiturate poisoning, after surgical anaesthesia, and in investigating the nature of the affected biophase during narcosis.

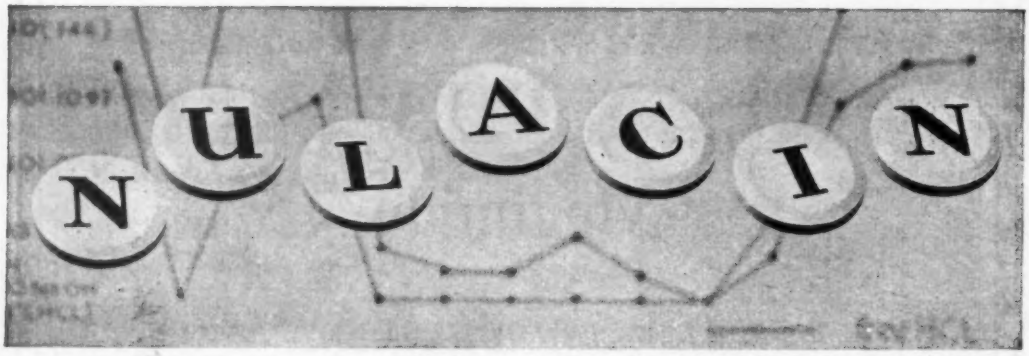
Original work done in Australia and in England was with material provided by the research laboratories of Nicholas Proprietary, Limited.

Nicholas Products Laboratories Ltd. are anxious to assist all those interested and will be pleased to make small supplies of "Megimide" (N.P.13) available to those medical practitioners who may wish to carry out trials.

Application should be made to:

NICHOLAS PRODUCTS LABORATORIES LTD.
Buckingham Avenue, Slough, Bucks.

MILK-ALKALI DRIP THERAPY WITHOUT DISCOMFORT



GASTRIC ACIDITY can now be controlled effectively, and without the inconvenience of intragastric milk-alkali drip therapy. This is made possible with the help of NULACIN.

Before NULACIN was evolved, a continuous antacid effect could only be achieved under hospital conditions, and with discomfort to the patient.

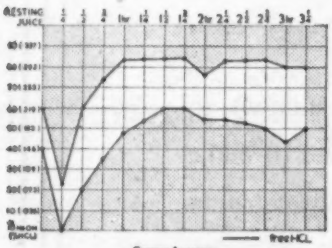
INDICATIONS

NULACIN tablets are indicated whenever neutralization of the gastric contents is required: in active and quiescent peptic ulcer, gastritis, gastric hyperacidity.

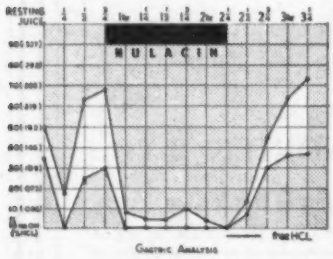
Beginning half-an-hour after food, a NULACIN tablet should be placed in the mouth and allowed to dissolve slowly. During the stage of ulcer activity, up to three tablets an hour may be required. For follow-up treatment, the suggested dosage is one or two tablets between meals.

NULACIN tablets are not advertised to the public and have no B.P. equivalent. May be prescribed on E.C.10. The dispensing pack of 25 tablets is free of Purchase Tax. (Price to pharmacists is 2/-.) Also available in tubes of 12.

NULACIN tablets are prepared from whole milk combined with dextrins and maltose, and incorporate Magnesium Trisilicate 3.5 grs.; Magnesium Oxide 2.0 grs.; Calcium Carbonate 2.0 grs.; Magnesium Carbonate 0.5 grs.; Ol. Menth. Pip. q.s.



Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.



Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.

BIBLIOGRAPHY:

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Medical Treatment of Peptic Ulcer. *Med. Press*, 27th February 1952, 195-199

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Further Studies on the Reduction of Gastric Acidity. *Brit. Med. J.*, 23rd January 1954, 183-184

Clinical Investigation into the Action of Antacids. *The Practitioner* July, 1954, **173**:46

NULACIN is available throughout the British Commonwealth, in the U.S.A. and many other countries. It is known as NULACTIN in Canada and Sweden.

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cinnamate and palatability

atropine and gastric intolerance

Chloramphenicol cinnamate, a new tasteless derivative of chloramphenicol, which leaves no residual bitterness on the tongue after oral administration, has been combined with atropine to form Alficetyn Suspension, a palatable preparation which has a wide range of therapeutic activity when given by mouth. Chloramphenicol cinnamate is hydrolysed in the alimentary tract releasing the parent substance chloramphenicol.

The small dose of atropine is included in the formula of Alficetyn Suspension for its spasmolytic effect. It greatly reduces the possibility of gastric intolerance and aids retention of the antibiotic.

Alficetyn Suspension contains in each teaspoonful (4 c.c.), chloramphenicol cinnamate equivalent to 125 mg. chloramphenicol B.P., and atropine sulphate 0·032 mg.

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CHLORAMPHENICOL CINNAMATE with ATROPINE

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An investigation (Irish J. Med. Sci. July 1954) showed that 50% of cases of hypochromic anaemia of pregnancy could not tolerate ferrous sulphate because of nausea. Intolerance to ferrous gluconate, however, occurred in only 10%. Comparing the haematological response to the two haematinics the authors found ferrous gluconate to be the better.

FERLUCON ELIXIR is particularly suitable for children and infants, and extensive laboratory investigations have confirmed its high stability. Enquiries instituted have so far failed to bring to light any cases of poisoning of children with ferrous gluconate.

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BOTTLES OF 25, 100 AND 250 TABLETS

ELIXIR, EACH FL. DR. (3·5 ML.) CONTAINS 0·3G. FERROUS GLUCONATE (EVANS)

BOTTLES OF 4 FL. OZ. (114 ML.)

Bulk packs also available.

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effective

local antibiotic therapy—with minimal risk of sensitisation

'POLYFAX' combines 'Aerosporin' brand Polymyxin B Sulphate with Bacitracin in a new antibiotic ointment of *very wide antibacterial range*. 'Polyfax' has a prominent place in clinical practice because

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'POLYFAX' is non-irritating and may be applied for long periods if necessary. It is available in tubes of 20 gm. for topical application and as 'Polyfax' brand Ophthalmic Ointment in tubes of 4 gm. with special nozzle.

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'DROMORAN'

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EFFECTIVE TIME
4-6 HOURS

EFFECTIVE TIME
6-8 HOURS

PACKINGS

Tablets: 1·5 mg. in packings of 20 and 200.
Ampoules: 2 mg. in 1 c.c. in packings of 6 and 50.

Effective by mouth

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MENTAL HEALTH AND SPIRITUAL VALUES*

Sir GEOFFREY VICKERS
V.C., M.A.

ALL of us are heirs of two traditions which are hard to reconcile, the scientific and the prescientific. Each has its own language and its own concepts and their implications seem partly inconsistent; so it is hard to translate from one language to another or even to speak with conviction in either. Prophets, philosophers, and poets had been expressing their intuitions many centuries before modern science was born; and they dyed our language deeply with images and implications about the nature of man and his place in the universe, which are foreign to the images and implications of science. This hampers our talk and confuses our thought.

During the last fifty years psychologists have added to man's personality a new dimension, in which much of himself lies hidden. Sociologists and social anthropologists have shown how deeply he is conditioned by the social nexus and have asked how far he can usefully be considered in abstraction from it. Anatomists and physiologists have made him more conscious of the physical basis of mind; and now the physicists are joining them with exciting, if disturbing, theories about the working of the brain.

These new insights clash with our older concepts about the nature of man. They illuminate but they also confuse. Prescientific language, whether of Christians or of humanists, was not made to the measure of such a creature; and scientific language does not cover the whole of the ground. No wonder most of us find it difficult to say all we want to say about man on the basis of any one consistent assumption. It is not easy to see how a man can really be at one and the same time a soul accessible to Grace, a responsible moral being, an animal, a machine, a cell in an organic society, and a random unit which is only significant statistically. Yet in ordinary speech we are continually using words which have all these implications; and if we did not, there would be some things which we could not easily say. If we have not yet resolved our contradictions of language and concept, we can at least refuse to believe that any language or any concept completely represents the truth behind it; and when we are tempted to seek the satisfaction of consistency by averting our eyes from some aspect of experience, let us remember Walt Whitman's words:

> "Do I contradict myself? Very well then, I contradict myself. I am large; I contain multitudes."

* * *

The ancient controversy between believers in a God-centred world and believers in a man-centred world dates back before the birth of Christ and still divides Christian and humanist today. It involves the question whether spiritual values are rooted in the nature of things, and thus have absolute validity for individual men, or whether they are merely socially determined norms, which in other circumstances would be determined differently.

Men do, in fact, hold strong convictions about what should be sought and avoided, accepted or rejected, admired or abhorred. Some may call these principles, standards, virtues; others may call them rationalisations, generalisations, abstractions from the stream of experience. Yet, though they would differ about the origin and validity of these evaluations, they would not differ about their existence or their power to affect behaviour consistently and thus to give to the characters of men and nations such coherence and distinctiveness as they possess.

In the history of thought some of these evaluations have persistently been made and taught as claiming the acceptance of men, not as being socially useful but as being the right response for an individual man to his nature and his situation. Some indeed are also socially useful and would probably be evolved by any successful social group, but others are not so easily explained; and these, curiously, are found in identical terms in cultures which are independent and diverse.

Early in the first millenium before Christ, a little pastoral tribe on the sun-bitten hills of Judæa produced a literature which is alive today. It has lived because its teachers were concerned not so much with social duties as with the preconditions of the good individual life.

> "Who shall ascend into the hill of the Lord? . . . Even he that hath clean hands and a pure heart; that hath not lifted up his mind unto vanity nor sworn to deceive his neighbour . . ."

A little later in time and far removed in space, the Indian prince Gautama was teaching the same attitude:

> "Whoso keeps his eyes from vanity, controlled and temperate, faithful and strenuous, Mara cannot overthrow. . . . Who speaks or acts with purified mind him happiness accompanies as his faithful shadow. . . . They who have not lived purely in their youth, these ruefully ponder as old herons by a lake without fish."

Yet a little later, on the other side of the Aegean, Plato was describing, in allegories which still move us, the relation between the delusive world of sense and the eternal verities behind them, the discipline of mind and body needed to apprehend truth, goodness, and beauty and its great reward.

Jew, Indian, and Greek had profoundly different ideas about the nature of the universe and about man's place in it, but they shared an almost identical view about the route which a man must take to apprehend it or at least about the initial steps. They are at one in stressing the need for the "purity" which comes from turning away from "vanity"; and purity and vanity mean, I think, much the same to them all. They are extremely general concepts, to be valued not so much for themselves but as the preconditions of apprehending other values. The Buddhist may live in the world but he must not become "attached" to it; the Christian may live in the world but may not "lay up treasure" in it. The mind which is thus unattached is pure. "He who has no wound can handle poison" said the Buddha. Paul said "To the pure all things are pure."

To scientists of many disciplines, from social anthropology to neurophysiology, as well as to psychologists, it must be a matter of great interest that a creature such as man has produced and nourished such an ideal as this. It does not seem to be of a kind which societies would naturally evolve; indeed, it has often produced conduct which society has rated as strongly antisocial. It would not seem likely to survive; yet it has survived. It originated with peoples, two of which had no idea of rewards in an after life; and though the Buddha commended his "right path" as a way of escape from the wearisome cycle of rebirth, he commended it also, sometimes rapturously, as the way to supreme satisfaction here and now. So did the others. So do those who commend it today.

Somewhat later again, Jesus of Nazareth restated earlier Jewish insights in a much more positive and dynamic way. When he summed up "the law and the prophets" within the commandment to love God and neighbour, he placed love in the forefront of spiritual values; and he exemplified his teaching by his life in a

* Abridged from an address given at the World Congress for Mental Health at Toronto in August, 1954.

way which must stir the imagination of thoughtful men, whether Christian or not.

"Love" and "non-attachment" are opposite poles of the same magnet. They involve a respect and a compassion for individual human beings as such and a corresponding lack of respect for their differing material circumstances. They cannot safely be separated, though they often are. They do not imply all the spiritual values but they provide the key to reconciling their eternal conflicts.

For spiritual values are in constant tension. They come into conflict wherever we reach the level of practical decision in concrete situations—and it is only at this level that spiritual values appear in action. Our ideas of mercy and of justice, for example, affect our legal and our penal codes and the way in which these codes are applied in particular cases. At these levels they encounter socially determined norms, with which they sometimes conflict and sometimes concur.

In the practical decisions of life, spiritual and social values are always observed in action together and in their operation they overlap. The Christian, however—and not the Christian alone—would assert that they are not identical and would appeal to history to show that our values are not derived solely from social convenience but are deeply affected by often conflicting insights derived from some other source.

It is possible to find this other source simply in the predicament of individual man. The history of man's thought, it may be said, is the record of his search for a way to organise his experience so as to make it significant or at least bearable to him. Human self-consciousness and human memory give to each individual a sense of separateness, of continuity, and of purpose, which accord strangely with a creature so social, so transient, and so weak. How should he bear either the burden of his separateness or his fear of losing it? How prevent his desires from frustrating each other? How support their frustration by event? On what should he set his heart which will not let him down? These questions, however unformulated, lie at the core of the experience of being human. Spiritual values it may be said, are answers to this unspoken prayer. They are ways of organising experience.

This would not be accepted by any of the rival views as an adequate explanation of spiritual hunger; but all, I think, would agree that the hunger exists. They would differ about its origin and its nature and would probably be unable to agree even on an appropriate name for it; but they would not differ about its existence. Freud wrote:

> "I have no knowledge of having had in my early years any craving to help suffering humanity. My innate sadistic disposition was not a very strong one, so that I had no need to develop this one of its derivatives."

The Christian, who is first repelled by the implications of this passage and then puzzled to recall that Freud did in fact devote his life, with outstanding success, to healing the sick and indeed to casting out devils, may get some light by reading, a few sentences later: "In my youth I felt an overpowering *need* to understand something of the riddles of the world in which we live and perhaps even to contribute something to their solution." Freud does not in this passage offer any psychological explanation for this "overpowering need"; and if he did, the need would remain a hunger.

I want, then, so far as possible, to concentrate on the needs and the satisfactions which spiritual values are invoked to explain, without asserting or denying their rival explanations. What we observe and experience is process—that is, happenings and the tendency for things to happen, including, in human behaviour, response and the tendency to respond. We can discriminate between happenings with great refinement and recognise in them common aspects; but we have an unhappy linguistic habit of labelling these aspects with abstract nouns—and I have a deep distrust of abstract nouns.

The responses which spiritual values are invoked to explain have one striking feature in common. They create far more problems than they settle. To accept spiritual values does not take the tensions out of life. While it resolves some, it creates many and heightens all. What is claimed for it is that it supplies the vision and the strength to support them and to grow by them. It is this which distinguishes the answer of religion in response to the perennial question of distracted humankind.

* * *

What of the answer of psychology? When I ask myself and you "What, if anything, has mental health to do with spiritual values or they with mental health?" I mean, on the one hand, "How far are spiritual values insights into the conditions needed for mental health?" and, on the other, "How far does our developing understanding of mental health and mental illness throw light on the meaning and nature and validity of spiritual values? Does it challenge or reinforce them? Is this increasing knowledge likely to make for our spiritual well-being or for our spiritual decay or is it likely to be as equivocal as other scientific knowledge has so far proved to be?"

These questions are highly topical. The doctrine of progress, after two centuries of phenomenal growth, is on the defensive. Its critics press two formidable attacks.

They assert first that the growth of knowledge does not involve the growth of well-being. It does not even give us greater control over our environment. The idea that it does so is based on the fallacy that the environment is finite, a continent of which the advancing frontier of science leaves an ever smaller part unconquered. This, say the critics, is an illusion; for we make our own environment as we go along. Every act of so-called control lets loose a thousand new variables, which in their turn will demand to be known and controlled; and in the meantime these increase the factors to which we must respond and reduce our knowledge of them. Thus the faster we change our environment, the less we know it. The frontier of control shrinks, as the frontier of power widens; and it will go on shrinking, until we use our power not to change but to hold constant the limitations within which we are content to live and to develop.

These voices were first heard when a century of relative peace broke in the thunderstorms of 1914; and they used to draw their examples from the effect of science on war. From the aircraft to the hydrogen bomb there has been no lack of evidence that the power of science is at least ambivalent. Yet still there stood the belief that it was a curse only when misused in war. Men had unhappily progressed faster in physical than in social knowhow. They needed a few decades to catch up.

The critics now press the attack on this inner stronghold. Even power used peacefully and with good intent leads us into ecological traps from which we may or may not escape. Go which way we will, we shall meet ourselves coming back. Sir Macfarlane Burnet illustrated this in a recent address:

> "Urban life, a necessity for the development of civilisation, inevitably led to the development of infectious disease . . . the science of applied microbiology has liberated us from that ecological trap but led us into the other of over population. Birth control can save us from over population but confronts us with the new trap of genetic deterioration. Wherever we utilise knowledge for the short-term satisfaction of our desires for comfort, security, or power, we are all too prone to find that on the long-term view we are creating one more ecological trap, from which sooner or later we must extricate ourselves."

This progress, say the critics, is like that of a tightrope walker who has tied the ends of his pole to the wire he walks on. Every move to redress his balance is bound to disturb it.

The other line of attack is different. Apostles of progress in the past have assumed that the behaviour of men and of societies is governed by laws like the laws of physics, and that knowledge of these laws will give them control of their individual and collective fate as great as that which their physical knowledge was supposed to have given them over Nature. Neither assumption, say the critics, is necessarily true; and if the first were true, the second would not follow. The only result which would logically follow would be a vast enlargement of the possibilities of tyranny.

We cannot decide this by an appeal to history; for we still know far less about the behaviour of men and nations than about the behaviour of atoms and nebulæ; and what we know is of such relatively recent date that history has not had time to condemn or approve the effect of this knowledge on our affairs. It may be that knowledge about ourselves will prove a less equivocal gift than knowledge about the universe. Can we hope that, however two-edged are the swords wielded by the other sciences, mental science at least will set us no ecological traps, that it will bring us not only knowledge but wisdom?

Descartes foresaw this question and made a tentative reply. The flood of knowledge which would enable us to make ourselves lords and masters of life would, he declared, be useful not so much for the "invention of an infinity of contrivances" as for the preservation of health. If anyone could make men *plus sages et plus habiles* it was the doctors. Thus he cast the medical profession in a nobly positive rôle. If we make a realistic estimate of what might be achieved in the field of mental health, how far, if at all, can we expect it to meet the critics of progress and justify the hopes of Descartes—to make men's value judgments more noble, more acute, or at least more consistent? To make men more sensible may seem a pedestrian ideal but it looks at least more hopeful than to make them still more clever.

* * *

Why have we come to expect less of the doctors than did Descartes? Partly, I suggest, because we stand at the end of the hundred years which has seen the conquest of bacterial infections. This has been the outstanding impact of medicine on human life in the last ten decades and it has strongly affected our understanding of health.

This achievement eliminated half a dozen lethal diseases; made possible aseptic surgery; shaped the present concept of public health; and made possible the growth of cities. It also fortified in the layman's mind the ancient and, I think, mischievous idea that a disease is an external entity, an invader to be repelled; and led him to regard health negatively as the absence of disease.

Experience, if not wisdom, may well lead us to revise these ideas. The conquest of bacteria has not only raised the expectation of life, it has also raised the rate of increase of populations, the incidence of diseases which kill more slowly, and the number and proportion of the infirm, especially the chronic sick. We may be better off; but we certainly set loose far more variables than we corralled. If the virus diseases should capitulate, as the bacterial diseases have done, this process will be still further speeded.

Thus already the attention of doctors and laymen alike is turning to two fields which have been relatively neglected: (1) to the possibility of building up health of a kind which will carry a higher degree of general immunity; and (2) to the problem of bearing, and helping each other to bear—not only stoically but fruitfully—the prolonged years of enfeeblement and degeneration which we have won by conquering pneumonia. Both these problems are directed not to removing hazards but to making ourselves fit to bear them.

The emphasis in preventive medicine has shifted from the lowering of hazard to the raising of immunity; and in doing so it has shifted from things which can be done for people to things which people must do for themselves. The change is significant; it reverses a long-accepted trend. In equating himself with his environment, it has been the pride of progressive man to make his environment fit him. To accept the environment and learn to be equal to it is by no means orthodox—but it is refreshingly sane.

But there still lies far in the background the concept of health as a dynamic condition, of which immunity to disease is only one reflection. Our knowledge of constitutional types is still slight, still slighter is our knowledge of what determines the strange variations in apparent vitality between man and man or of how far this elusive quality can be developed. Occasional innovators in teaching and training assert and demonstrate that we might make more of ourselves than in fact we do; but, by and large, only the mountaineer and the athlete try to get fit, rather than merely to keep well.

I venture on these speculations because I feel that we laymen, dazzled by the results of defeating bacteria, tend to think that the rôle of science is to remove hazards, rather than to fit us to face them. This, I think, is a dangerous fallacy. I do not believe that it is true of physical science or even of medicine—except at a price which we should be unwilling to pay. I am sure that it is not true of science in relation to mental health.

* * *

The conquest of infection has had little effect on mental illness, except to remove from that category what had been regarded as a major psychosis—namely, general paralysis of the insane. Yet during the same period there has been a notable advance in the cure of mental illness and, I think, in its prevention also. New treatments have begun to make some impact on the major psychoses, but I am chiefly concerned with the impact of new psychological and chemical knowledge on the more widespread conditions of neurosis and mental stress which are a characteristic of our age and a reproach to it.

The main characteristic of mental ill health is inability to bear experience. The condition which takes the distressed human being to the psychiatrist is fundamentally the same as that which takes him to the priest or to the philosopher, and it is legitimate and important to compare what each has to offer to the disturbed mind.

The psychiatrist today is equipped, as doctors fifty years ago were not, with techniques for uncovering the origin and nature of mental stress; with theories to mitigate its unbearable quality; and with drugs to blunt its physical effects. He is less well equipped with means, physical or psychological, for raising the threshold of what can be borne with impunity.

The threshold of the bearable varies with the individual. Psychologists, who subject rats to stresses which would certainly reduce me to tears or frenzy, find that they vary strikingly in their stability of character; and that by breeding from the most stable and the least stable specimens, it is possible to produce two strains which in this particular are wholly distinct, all the stable strain supporting their stresses better than any of the other. It seems probable that for men, as for rats, variations in stability have a genetical basis.

On the other hand, it is a fact of common observation that humans who have proved unable to cope with a

situation have later become equal to it through a change in their mental attitude, though the external situation remains unchanged. Sometimes this is due simply to understanding the nature of the conflict. A situation cannot be faced until it is realised; psychiatry has not only revealed how much conflict is latent but has developed most welcome means of bringing it to light.

Yet a conflict is not necessarily resolved merely by being disclosed. It may not be capable of being resolved; it may simply have to be borne. Tensions are not only inescapable, but necessary and fruitful. It would certainly not be fair to say that psychiatry offers escape from them, while religion offers the strength to bear them, for each in some measure offers both; but the emphasis in psychiatry and throughout the field of mental health is on reducing rather than on supporting stress. Possibly this is a limitation inherent in mental science itself. It may be that the insight which makes stress worth bearing is different in kind from the insight which merely reveals its nature. Or it may be that mental, like general medicine, is hampered because we expect it to make our circumstances easy enough for us, rather than to make us equal to our circumstances.

In the preventive field there has been a most notable advance. The growing knowledge of our nature has greatly reduced the hazards which we unwittingly create for each other. During the last fifty years, the layman's idea of human nature has changed out of all recognition and this has affected every human relationship. Parents bring up their children differently; education and penology have been transformed; business management talks a new language. Authority, public and private, has adopted a new conception of how human beings work.

Why, then, does mental stress still darken life so widely? Shall we blame international tension and the fear of war? I do not believe that this is the answer. It is hard to suppose that the shadows of world events lay so darkly across individual minds in the stable-seeming days before the first world war; yet the crises of those days seemed real enough to a generation whose yardstick was the 19th, not the 20th, century. In any case, the events which divide our wills and wring our hearts and make civil war in our heads are seldom public events. We live each in a small world, especially when we are young. It is particular human relationships, not the great tides of history, which set our inner stresses.

May it not be rather that we are neglecting the more important need? By all means let us reduce the occasions for stress; but stress will remain a characteristic of human life and it may be that if we could remove it, we should lose what most we need. Security is not to be found by eliminating challenge, but only in an inner assurance which no challenge can disturb.

The easy way to relieve stress is to yoke mental science and modern techniques of persuasion to the task of making everyone well-adjusted to everyone else. This is not only tempting, it is in a measure useful and indeed necessary. For our growing organisation demands ever more conformity, ever more mutually adjusted specialism, ever more acceptance to make it work at all. There seems ever less time for doubt and for dissent. Yet both Christian and scientific insights warn us that along that road lies mortal danger not only for the individual but for society also.

For saints, artists, creative thinkers, and above all martyrs are seldom well-adjusted people; and no civilisation can do without them, least of all ours which changes faster than any has before. These are they who incubate tomorrow's orthodoxies through their heretic phase—for all orthodoxies were heresies when they were born. These are the deviants, from among whom spiritual evolution will find the material for her next big adaptation. In every age so far enough have escaped martyrdom to fertilise the next. It would be ironic, if we alone were efficient enough to make ourselves spiritually barren.

And not for the sake of the saints and martyrs only do we reject the cosy heaven of mutual adjustment. Life is an individual affair for each one of us. We cannot fight each other's battles, feel each other's pain, or see each other's visions. The social condition which is integral to us does not make us less than our individual selves. For each of us, as well as for society and posterity, the need to struggle is the chance to grow. The world is like a dark forge, lighted by the sparks which men strike as they beat the stuff of life into significance on the anvil of circumstance. The light is a function of the effort. We may make it as bright as day if we hammer hard enough; but we shall never dispense with the need to hammer or live by the light of sparks struck yesterday.

It is not enough, then, that we should use mental science to reduce the challenges of stress or even to reveal their nature. We need its help in reaching the state of mind which can bear them and grow by them. There may be those who think this beyond its compass; I do not. It may never produce guidance, which insight has not already anticipated; but it may, at least, make it easier for us to be influenced by what we already divine.

It might, for example, be the greatest help to have some better understanding of how the mind builds up its experience. We see around us people so limited by their mental filing systems that they miss or are hurt by most of their experience, while others grow and profit by everything that happens to them. We need not be surprised; the human organism would be strange indeed if any form of organisation were as useful as any other. We would expect, for example, even if every mental hospital were not full of evidence to prove it, that complete self-centredness would be a most inconvenient organising principle for creatures such as we are.

Seen from this angle by far the most significant discovery of mental science is the power of love to protect and to restore the mind. Every film-goer, every newspaper reader, today believes that there is likely to be a causal relationship between the deprived child and the adult and adolescent criminal. He will accept, on the authority of science, that love can build for one child a haven of security in a mad world and thus equip it to give back the same powerful influence in after-life, while its absence may leave another imprisoned in self and capable of no contact with its kind but aggression. It is not often that the findings of science confirm the intuitions of religion in language which does not even need to be translated. This alone, in my view, entitles mental science to be regarded not as a rival but as a partner in the eternal effort to realise spiritual values in the daily life of men and women—even perhaps in the policies of governments.

I declare myself, then, to feel rather more than the modest optimism of Descartes in regard to mental science. I am sure that it will help us to keep sane in the kind of world which physical science is building for us. It might enlighten the choices which invisibly, inexorably determine where that world is going. And in both these functions it seems less likely than physical science to land us in an inescapable ecological trap.

Yet its most important promise, I believe, is the promise of helping us to conceive of mental health as a positive and dynamic condition of mind, to see the path towards it, to develop the will to achieve it. Mental health is not the same thing as spiritual vitality or spiritual vision, but I do not believe that they will always belong to different universes of discourse.

EFFECTS OF ATHEROSCLEROSIS ON THE CORONARY CIRCULATION

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WHEN we attempt to compare the incidence of coronary disease in different age-groups or in different sections of the community on the basis of post-mortem findings we have to adopt some system of grading, and here we encounter difficulties.

Atherosclerosis has many variable features, and almost any one of them may be taken as a gauge of severity. We may take, for example, the number and extent of the lesions, the amount of fatty change, or calcification, or ulceration, or the degree of intimal thickening or narrowing of the lumina; and, whereas any one of them may indicate the severity of the atherosclerosis, they do not all give a true measure of the impairment of the coronary circulation, which is what we want to know in coronary disease in its clinical aspect.

The difficulty is that atherosclerosis does not necessarily lead to coronary impairment. The severest degrees of it are often seen in people with no history whatsoever of cardiac disability, whereas fatal occlusion may develop in cases where the arteries are, on the whole, relatively free from atherosclerosis. We have recently seen this in a man aged 31 in whom the only coronary lesion apparent to the naked eye was an occluding thrombus on a solitary nodule of atheroma in the anterior descending branch.

The dangerous feature in atherosclerosis is narrowing of the arteries; and if we are to avoid confusion in interpreting our records we must have a clear idea of where narrowing stands in relation to the atherosclerotic process.

Pathogenesis of Arterial Narrowing

Until recently it was assumed that the narrowing of arteries in atherosclerosis was due to an overgrowth of the intimal connective tissues induced by the presence of fats or other noxious agents in the vessel walls, and accordingly the process of narrowing was considered to be progressive and likely to increase so long as the disease persisted. From this it seemed to follow that the greatest narrowing would be found in the most advanced lesions, which, as we now know, is far from true.

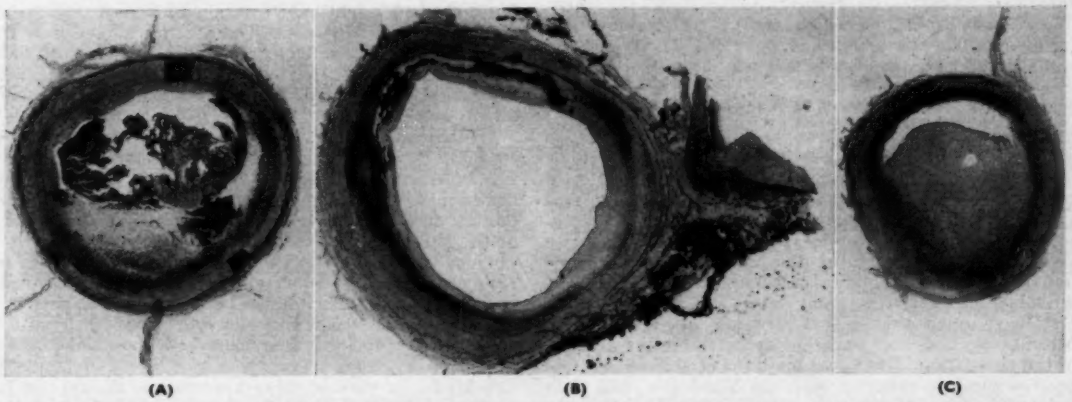
Arterial thickenings, identical with atherosclerosis, are produced by thrombosis (Duguid 1946, 1948). When a thrombus forms in an artery it becomes covered with endothelium and thus incorporated in the vessel wall, with the result that when it is organised it forms a fibrous thickening of the intima. Since most mural thrombi show some fatty degeneration they give rise to that combination of fatty change and fibrosis which is characteristic of atherosclerosis. This does not mean that all atherosclerosis is thrombotic in origin. The lesions are an end-result common to several different processes (Duguid 1954), but a review of the histology gives every indication that those lesions which involve narrowing are thrombotic, and we must now look on thrombosis not merely as an occasional complication of, but also as a factor in, atherosclerosis. With this in mind narrowing is more easily understood.

When a thrombus forms in an artery it occupies the lumen and must therefore reduce the blood-stream to some extent, but it should be realised that the reduction is not necessarily permanent, because thrombi tend to shrink. Under the influence of the blood-pressure quite large masses of fibrin will in time become flattened out and condensed, with the result that when finally organised they form comparatively inconspicuous thickenings of the intima. Thus narrowing may be but transient, and maximal in the early stages of the atherosclerotic process.

On the other hand, thrombotic thickenings tend to be cumulative and progressive, because arterial thrombosis is a recurring condition. In the arteries of old people we often see evidence of repeated mural thrombosis, with one fibrin deposit superimposed on another, each adding to the thickness of the vessel wall. Consequently we might expect to find the greatest fibrous thickenings in those who have lived longest, and so in general we do, but it does not follow that the greatest impairment is to be found in such cases, because thickening does not necessarily involve narrowing.

Dilatation of Arteries

In the accompanying figure sections from corresponding points in the left coronary arteries from three different people are shown at the same magnification. A is from a man, aged 54, who dropped dead in his second attack of coronary thrombosis, the first having occurred six months previously; B is from a man, aged 67, who had no history of cardiac disability but died from hæmorrhage following an operation for cancer; and C is from the man, aged 31, already mentioned, who dropped dead while at work, having had no known previous attack, although he was said to have complained of indigestion in his last three weeks. The hearts weighed 440 g.,



(A) (B) (C)

Frozen sections of the same region of the left descending coronary arteries of three different people: (A) from a man aged 54; (B) from a man aged 67; (C) from a man aged 31. Blackened areas in A indicate width of medial coat at three points. (× 11.)

410 g., and 350 g. respectively; but, although the left coronary arteries were equally preponderant in all three, that from the oldest of the three men is by far the largest. When we compare the changes in these vessels we can see something of the effects of intimal thickening.

In section A a crumbling mass of fibrin in the lumen, representing the fatal occlusion, and a crescentic fibrous thickening of the intima below can be seen. The thickening does not entirely encircle the lumen but leaves a segment of the wall at the upper part unaffected, and there the medial coat is thicker than elsewhere. In considering the significance of this, certain principles of arterial histology have to be taken into account. MacWilliam and Mackie (1908) have shown that arteries contract after death, and the amount of contraction is indicated by the thickness of their medial coats compared with the size of their lumina, the media being thicker when the vessels are contracted. This post-mortem contraction is not simply a collapse of the arteries on removal of the blood, nor is it a rigor mortis, but it is a true tonic contraction of the muscle, the vessels being capable of reacting to stimulation, sometimes for as long as two days after death. Section A shows that the relatively thin media where the intima is thickened denotes a reduced contraction in that particular segment of the vessel wall.

Thinning of the media in relation to intimal thickenings has long been recognised as a feature of atherosclerosis, and has been interpreted in various ways, but in considering it we should take into account another important principle. Arteries are elastic tubes, able to maintain their appropriate calibre in face of a constantly pulsating internal pressure by reason of their ability to dilate and recoil again to their original size with each pulse wave. The recoil is not a muscular contraction but a purely elastic movement, depending on the inherent resilience of the vessel walls, and anything that impairs this quality will interfere with the movement and cause the vessels to remain more or less dilated. Post-mortem contraction and elastic recoil are different functions, the former being a tonic contraction of muscle and the latter merely a physical reaction; but both are measures of the range of mobility of the vessels, and the reduced contraction at the thickened part of section A indicates a loss of resilience, which has kept that particular segment dilated. Section B shows this effect carried further, because the intima round the whole circumference is thickened, the vessel is widely dilated, and, in spite of the intimal thickening, its lumen is greatly increased.

There seems to be little doubt that these appearances reflect in a large measure the state of affairs in life; and we may take them as evidence that atherosclerosis ultimately leads to dilatation of the arteries; hence any narrowing that results from thrombosis in the early stages tends to be cancelled out. It is therefore not surprising that the arteries of aged people, as Aschoff (1938) remarked, are usually dilated.

Danger of Atherosclerosis

It is in the early formative stages that atherosclerosis is dangerous, and a man aged 40 with a recent thrombus in his coronary system may be in far greater danger of sudden death than a man aged 70 with widespread lesions in the arteries. Consequently the records of atherosclerosis in general-hospital deaths are not likely to give a true indication of the incidence of coronary impairment in the community. Atherosclerosis is almost universal in adult life; and, if we are to judge from histology, much of it is thrombotic in origin, but even thrombosis does not necessarily involve impairment of the circulation. The great majority of arterial thrombi are too small to interfere with the blood-flow, and their only effects are to produce fibrous thickenings which, by reducing elasticity, lead to relatively harmless dilatation. It is when large thrombi form in close succession that there is danger; and so, from whatever aspect we view it, the essence of coronary disease is thrombosis.

Why thrombi form in the first place, and what relationship they bear to a primary fatty or other change in the vessel walls, are questions we must pass over for the present. Mural thrombosis seems to be common to most people who live beyond middle age, and is in most instances harmless; hence the more immediate and crucial questions are: how is the process usually kept within safe limits, and what are the conditions which sometimes allow it to exceed these limits and produce occlusions?

The answers to these questions are more likely to be found in the clinical study of thrombosis than in the morbid anatomy of atherosclerosis, which, after all, is in most cases but a late sequel of thrombosis; and if we are to use the general records to best advantage we ought to direct our attention more to narrowing than to the other features of atherosclerosis. Unfortunately this makes the inquiry more difficult because arterial thrombosis is in most instances localised, and the narrowing which results from it is usually confined to short lengths of the vessels, often no more than a millimetre or two in extent. Therefore to detect such narrowing the most exhaustive search through all the major branches of the coronary system is required, irrespective of whether the vessels appear grossly atherosclerotic or not. Unless we can be sure that this has been the practice in hospitals in the past, their records of atherosclerosis must be regarded as of doubtful value in the assessment of coronary impairment.

Re-establishment of Circulation

Another point to be learned from the histology of coronary disease is that total occlusion is not necessarily irreversible. It has been assumed that survival of the myocardium in cases of occlusion depends on the establishment of a collateral circulation, but a glance at section C will show that there is another mechanism to be taken into account. This section is from a point immediately below the fatal occlusion, and the terminal thrombus is not included, but the lumen is occupied by a mass of fibrous tissue which is obviously an old organised thrombus. Judging by its shape we must suppose that it originally filled the lumen, but it is now partially separated from the wall, allowing a channel for the blood to pass. Since there was no old infarct in the appropriate area of the myocardium in this case, we may conclude that this partial restoration of the circulation must have been effected sufficiently early to avert infarction, and that, if there had been no further thrombosis, the man might have continued his normal activities indefinitely. In due course, under the influence of the blood-pressure, the channel would no doubt have gradually widened and the fibrous mass shrunk, with the result that finally the circulation might have been largely restored.

Histological appearances of this kind are common in coronary thrombosis, and we may take them as representing an emergency mechanism by which total arrest of the circulation is not infrequently relieved. Two possible factors may be involved in the mechanism; retraction of the thrombus, and relaxation of the vessel; but it is obvious that the relaxation is the essential. Anyone who has studied the behaviour of living arteries under the microscope must have been impressed with the remarkable changes in diameter brought about by alterations in tone, and will appreciate how a sustained spasm of the vessel could prevent the opening of a channel of this kind. In view of these appearances should not our first concern in cases of coronary thrombosis be to encourage relaxation of the vessels? It is perhaps a pity

that the recognition of thrombosis as a cause of cardiac pain has led to the rejection of the use of the nitrites in such cases.

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THE TREATMENT OF CHRONIC AMŒBIC DYSENTERY WITH ANTIBIOTICS IN COMBINATION WITH OTHER DRUGS

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ALTHOUGH several drugs are available for the treatment of amœbiasis, there is still no single one that will eradicate it from the bowel in all cases.

Usually gr. 4 of emetine will quickly control an acute attack of amœbic dysentery, but the amœbic cysts are not affected; hence prolonged courses of emetine do not eradicate amœbic dysentery. The chief use of emetine is in the treatment of amœbic hepatitis.

Chloroquine is also useful in the treatment of hepatitis, but it is so rapidly absorbed in the upper bowel that it does not affect intestinal amœbiasis.

The other drugs used in amœbiasis can cure 70–85% of the acute and less chronic cases of amœbic dysentery but not the chronic cases.

Chronic amœbic dysentery responds only to a combination of drugs, and even then repeated treatments may be necessary. Some of the most successful combinations were evolved during the 1939–45 war by American and British workers.

The U.S. Army plan of treatment consisted in a preliminary course of penicillin and succinyl sulphathiazole to eliminate secondary bacterial infection from the diseased bowel wall, followed by emetine daily for 4–6 days, and subsequently emetine bismuth iodide for 12 days without a break. During the course of emetine bismuth iodide the patients also received a daily retention-enema of chiniofon sodium. During the succeeding 12 days either di-iodohydroxyquinoline or carbarsone was given. The patient was kept in bed throughout the treatment. If cure was not obtained with a single course, a second was given after an interval of 10–12 days.

Later, the British workers omitted the chiniofon-sodium enemata and, after a preliminary course of penicillin and sulphaguanidine, administered emetine for 2 days followed successively by emetine bismuth iodide for 10 days and carbarsone for 8 days. In addition the patient received di-iodohydroxyquinoline throughout the course of treatment. The results of this treatment were very good. In 103 cases of chronic amœbic dysentery treated by me in seven years the immediate cures were 81·5%, and after 3–6 months' follow-up 60·0%.

A patient who did not respond to two courses was not likely to respond to a third; a change in combination of drugs was necessary. Further, the treatment did not always eradicate the amœbiasis completely, because 17 of the 103 patients subsequently developed amœbic hepatitis from 6 months to 5 years after treatment.

Since then aureomycin and oxytetracycline have been found to combat the secondary infection and to destroy both the trophozoites and the cysts; so it has become possible to substitute them for penicillin, succinyl sulphathiazole, emetine, and emetine bismuth iodide and thus to make the treatment more effective and less offensive to the patient.

With this background an initial combination of aureomycin, carbarsone, di-iodohydroxyquinoline, and chloroquine, and, in some cases, a subsequent combination of oxytetracycline, carbarsone, and mepacrine were tried.

Material

32 patients with chronic amœbic dysentery of 3–12 years' duration were treated, 27 being males and 5 females. The diagnosis was based on previous history and findings and results of clinical, stool, and sigmoidoscopic examinations. Only cases found positive by stool and/or sigmoidoscopic examinations were selected for trial.

13 patients had previously had two or three courses of the U.S. or British Army plan of treatment described above; and 19 had had no standard treatment but had taken, singly or in combination, carbarsone, iodochlorohydroxyquinoline ('Vioform'), di-iodohydroxyquinoline, emetine bismuth iodide, emetine, aureomycin, and oxytetracycline rather haphazardly and inadequately several times.

7 had associated hepatitis or hepatic abscess, with the liver palpable 2–5 finger-breadths below the costal margin in the mid-clavicular line on inspiration. 3 of these 7 patients with hepatitis and 10 others had easily palpable and tender cæcum and/or descending colon. 1 had clinical jaundice. All had diarrhœa, abdominal tenderness, flatulence, indigestion, anæmia, and avitaminosis.

Method

Treatment

Anæmia and avitaminosis were treated with loading doses of intravenous iron and vitamins. There were no special restrictions on diet. A high-calorie high-protein diet rich in vitamins and leaving little residue was given according to the requirements and tolerance of the patient. The patients rested, preferably in bed, throughout the course of treatment.

The antidysenteric treatment consisted of aureomycin 500 mg., carbarsone 0·25 g., di-iodohydroxyquinoline 0·6 g., and chloroquine 0·2 g., all given together at 6 A.M., 2 P.M., and 10 P.M. for 6 days, followed without a break by di-iodohydroxyquinoline and chloroquine only for 14 days. The 6 A.M. and 10 P.M. doses were given with a drink of milk, and the 2 P.M. dose followed luncheon.

If any residual symptoms and signs were left behind after 6 weeks from the start of treatment, irrespective of a negative stool, a second course, consisting of oxytetracycline 500 mg., carbarsone 0·25 g., and mepacrine 100 mg., all administered together at 6 A.M., 2 P.M., and 10 P.M. for 6 days, was given. This was, however, done in only 5 cases in which there was slight residual tenderness over the cæcum or over the descending colon, and stools were still positive for occult blood but negative for trophozoites and cysts.

Follow-up

All the patients were followed up for at least 3 months. During the first month the patients were examined once a week, and during the second and third months once a fortnight, for clinical improvement.

Stools were examined on 3 consecutive days at the end of the first and second months and on 7 consecutive days at the end of the third month of treatment. They were examined fresh for trophozoites and by concentration method for cysts. The last examination for cysts was preferably done after a saline purge.

Sigmoidoscopy was done on all the patients except 3 females, at the end of 3 months' follow-up, along with tests for occult blood in the stools for evidence of residual ulceration. Appropriate blood-counts were also made in cases with anæmia and hepatitis.

Subsequent contact with patients was irregular, but 20 of them have been followed up from 8 months to 2 years.

Results

Clinical improvement.—There was progressive clinical improvement in 23 cases. Diarrhœa, abdominal tender-

ness, indigestion, and enlargement and tenderness of the liver, if present, mostly subsided before the end of the course of treatment or shortly after. In 4 cases diarrhœa continued for 6–14 days after completion of treatment, but the stools were negative in all of them. Progressive diminution in the number of stools in 3 of them suggested that diarrhœa was a secondary effect of drugs, probably aureomycin, and it was easily controlled with small doses of tincture of chloroform and morphine. In 1 case diarrhœa continued for 3 months. Barium radiography suggested in this case a residual chronic appendicitis, and the effect of its removal was dramatic. In another 5 cases tenderness and thickening over the cæcum and descending colon had not completely disappeared at the end of 6 weeks and progress appeared to have stopped, although the stools were negative. These patients were given a course of oxytetracycline, carbarsone, and mepacrine as described above, and in another 3–6 weeks they were symptomless. All the patients put on 4–8 lb. in weight a month and rapidly improved in health.

Stool examinations.—All the cases were negative at the end of the first month's check and thereafter during the follow-up.

Occult blood.—Tests for occult blood were negative in all the cases at the end of 3 months' follow-up.

Sigmoidoscopy.—All visible ulcers had healed within 3 months.

Discussion

The drugs used in the treatment of amœbiasis are of surprisingly divergent constitution and can be classified into five groups: (1) emetine and emetine bismuth iodide; (2) pentavalent arsenicals (e.g., carbarsone, dithio derivatives of carbarsone, and bismuth glycolyl arsanilate ('Milibis'); (3) hydrogenated hydroxyquinolines (e.g., chiniofon sodium, iodochlorohydroxyquinoline, and di-iodohydroxyquinoline); (4) aminoquinolines (e.g., chloroquine); and (5) antibiotics, of which aureomycin, oxytetracycline, and fumagillin are promising.

The uses of emetine and of chloroquine have already been described.

The dithio derivatives of carbarsone are more effective and less toxic than carbarsone. Milibis is almost unabsorbable; hence a high concentration of it can be obtained in the lumen of the large intestine with about a tenth of the toxicity of carbarsone. It is therefore bound to supersede carbarsone.

Iodochlorohydroxyquinoline is superior to chiniofon as an amœbicide, but di-iodohydroxyquinoline is still better and hence generally used.

Frye et al. (1952) found oxytetracycline to be superior to aureomycin in the treatment of amœbiasis; the cure-rates were 97·5% and 70·7% respectively. Armstrong et al. (1950), however, reported 94%, and Calero (1951) 86%, successes with aureomycin. In chronic amœbic dysentery in veterans of the 1939–45 war Hall (1951) obtained a cure-rate of 70%. Comparative studies with fumagillin in acute ulcerative amœbiasis in Africans by Elsdon-Dew et al. (1953) indicate that aureomycin is superior to fumagillin.

Emetine bismuth iodide, the pentavalent arsenicals, hydrogenated hydroxyquinolines, and the antibiotics act on both trophozoites and cysts.

The combination of drugs used in the present trial theoretically promised good results and achieved them in practice. The substitution of its dithio derivatives for carbarsone may produce even better results.

Summary

32 cases of chronic amœbic dysentery, all failures with previous therapies, were treated with a combination of aureomycin, carbarsone, di-iodohydroxyquinoline, and chloroquine for 6 days, followed without a break by di-iodohydroxyquinoline and chloroquine for 14 days.

In 23 cases the symptoms subsided before the end of the course of treatment or shortly after.

4 cases had residual diarrhœa. In 3 it was presumably due to the effect of aureomycin and subsided spontaneously in 6–14 days after completion of treatment. In the 4th case appendicectomy relieved it.

In the remaining 5 cases the cæcum and descending colon were still tender; an additional course of oxytetracycline, carbarsone, and mepacrine proved successful.

Thus, finally, all the cases were found to be cured at the end of 3 months' follow-up by clinical, stool, sigmoidoscopic, and occult-blood tests.

Subsequent follow-up of 20 cases from 8 months to 2 years showed that the cure was permanent.

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CONGENITALLY SHORT FRENULA OF UPPER LIP AND TONGUE

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SHORT frenula of the upper lip and tongue are common congenital deformities; but as they cause only minor disfigurement and disability they are often ignored.

Short Frenulum of Tongue

Not many years ago, if a child was late in acquiring speech, the mother was told by the neighbours that it must be "tongue-tied." The frenulum of the tongue was then "snipped" with scissors.

In order to discourage this barbarous practice some have said that tongue-tie requires no operation because it does not exist. Actually, however, a congenitally short frenulum linguæ (fig. 1) is relatively common; and, though it does not prevent a child from acquiring speech at the normal age, it does sometimes cause minor difficulties—e.g., in the pronunciation of certain consonants.

Division of a tight frenulum, without anæsthesia, by a snip with the scissors soon after birth is either dangerous or ineffective. If the snip is adequate it is dangerous because the profunda linguæ vein is usually divided. If the snip is inadequate, it is ineffective because no

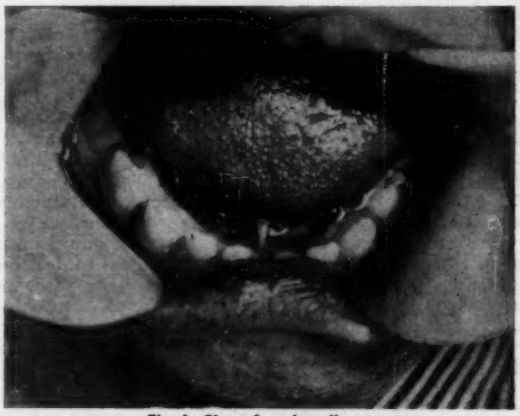

Fig. 1—Short frenulum linguæ.

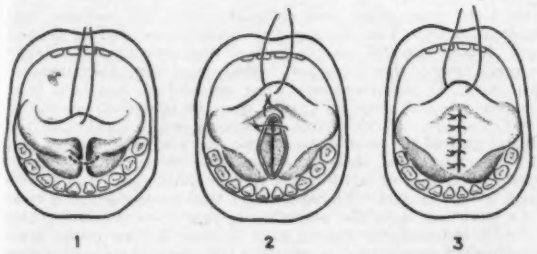

Fig. 2—Steps in operation for repairing short frenulum linguæ.

lasting benefit is achieved. On the other hand, I think that before he goes to school the child's disability should if possible be removed; and this can be done by the following operation:

Under intratracheal anæsthesia, with a throat pack in position, the tight frenulum is divided transversely (fig. 2). The mucosa on each side of the incision is mobilised by undercutting with blunt-nosed scissors: any deep bands of tight fibrous tissue should be divided until the tip of the tongue is free to protrude to the normal extent. Bleeding vessels are carefully ligatured. By traction, with a hook in the extremity of the wound nearest the tip of the tongue, a longitudinal suture line can be made. Lateral mattress stitches of chromic catgut, inserted with a fine cleft-palate needle, are used to close the wound and to repair the defect. A little penicillin cream is applied to the suture line, and the child goes home next morning. No special after-treatment is required.

Fig. 3—Congenitally short frenulum of upper lip, showing fibrous bar protruding as far as free margin of gum in midline, thus preventing fusion of alveolar processes of maxillæ.

Twenty-six babies have been treated in this way, and the results appear to have been satisfactory.

Short Frenulum of Upper Lip

A congenitally short frenulum of the upper lip (fig. 3) is invisible. It causes no disability, but gives rise to a wide gap in later life, between the permanent upper central incisor teeth. A wide gap here is conspicuous when smiling; and the patient, realising this, may refrain from smiling unless provocation is extreme—which seems a pity. The wide gap is caused because the short fibrous frenulum of the upper lip extends as far as the free margin of the gum between the two alveolar processes of the maxillæ; this prevents bony fusion in the midline. A simple little operation in childhood will remedy this.

Under general anæsthesia, with a throat pack in position, the soft tissue is excised from the gap between the two alveolar processes of the maxillæ (fig. 4). The bone is roughened with a small periosteal elevator. A transverse incision is made across the tight frenulum beneath the lip. The mucosa is mobilised on each side, and the wound is repaired by a longitudinal suture line in the same way that the tight frenulum linguæ is treated.

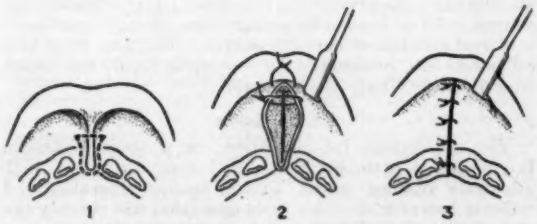

Fig. 4—Steps of operation for repair of short frenulum of upper lip.

During the last two years I have used this method on sixteen occasions, and the parents have been pleased.

The cause of this congenital defect is unknown, but it may be related to median cleft of nose and median harelip, because median harelip is always associated with a short frenulum of the upper lip. Moreover in patients with lateral harelip a tight frenulum of the upper lip is often present (fig. 5).

Fig. 5—Median harelip with short frenulum of upper lip.

Prolapsing Mucosa of Upper Lip

An uncommon congenital abnormality to be distinguished from short frenulum is a condition in which the lining mucosa dips below the vermilion border (fig. 6). So far as I am aware, this has not yet received an official name; and, though the term "congenital prolapsing mucosa of the upper lip" is cumbersome it seems to describe it best.

In the three patients whom I have treated the deformity was repaired by making a horizontal incision in the lining mucosa from one end of the lip to the other. I excised

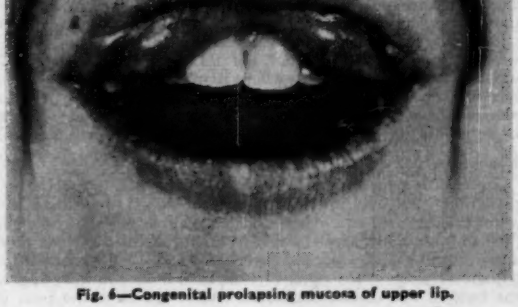

Fig. 6—Congenital prolapsing mucosa of upper lip.

an ellipse of the prolapsing mucosa. I then sutured the wound with a horizontal suture line, using "end-on" mattress stitches of chromic catgut. The first deep bite included the orbicularis oris muscle, and the more superficial bite only the mucosa.

Conclusion

The indications for operation on a short frenulum linguæ are a little indefinite, and many surgeons with adequate reasons might advise against operation. I believe, however, that a simple operation will remedy the defect with negligible risk and pleasing results.

The indications for operation on a short frenulum of the upper lip are definite: the fibrous tissue preventing bony fusion of the alveolar processes of the maxillæ should be excised. This will prevent disfigurement in later life by wide spacing of the upper central incisors.

MEDIAN-NERVE PALSY ASSOCIATED WITH ACUTE INFECTIONS OF THE HAND

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Two cases have recently been seen at University College Hospital in which median-nerve palsy resulted from acute pyogenic infection of the hand. We can find no reported account of such an association, although it is well known that interference with the function of the median nerve may result from tuberculous infection of the flexor-tendon sheaths in the carpal tunnel.

Case-reports

CASE 1

A housewife, aged 58, was admitted to University College Hospital on April 4, 1954, having cut her right thumb two days previously on a broken milk-bottle. About sixteen hours after this injury she developed severe pain in the palm of the hand and in the wrist. Her doctor gave her an injection of penicillin, but as the pain gradually became worse he referred her to hospital. She did not complain of pain in the thumb at any time. She gave a past history of gout affecting the left foot, and she also stated that she had had "rheumatism" of both hands for many years.

Examination

Temp. 100·6°F; pulse-rate 80 per min. In her right hand there was a small clean puncture-wound in the centre of the interphalangeal flexor crease of the thumb. The thumb and all fingers were swollen; there was œdema of the dorsum of the hand; and the whole hand felt hot. There was slight redness and tenderness over the thenar eminence and at the front of the wrist. The fingers were flexed into the palm and active extension was impossible; attempted passive extension caused severe pain in the distal part of the palm and also just above the wrist. Movements of the thumb were full and painless. There was slight limitation of extension at the wrist. She complained that her fingers felt numb, but no sensory loss was found anywhere in the hand. There was no lymphangitis or lymphadenitis. The left hand showed the changes of early osteo-arthritis with Heberden's nodes and slight limitation of extension of the fingers.

Treatment

Immobilisation and elevation of the hand and intramuscular penicillin (500,000 units six-hourly) failed to control the pyrexia and local condition, and after three days aureomycin (250 mg. six-hourly) was substituted for penicillin. Six days after admission the fingers were more tightly flexed into the palm and there were signs of localisation of the infection at the base of the thenar eminence. After ten days the pain in the wrist and palm was subsiding, the temperature was normal, and the local signs in the thenar eminence had cleared up. There was still no evidence of any sensory loss. Daily physiotherapy was started and antibiotics were discontinued. On April 23 (nineteen days after admission), however, pain returned to the wrist and palm, and the temperature rose to 100°F again. At this time induration was palpable in the distal part of the palm opposite the ring and little fingers, and for the first time there was sensory loss—blunting to pin-prick, and loss of light touch in the thumb and radial two and a half fingers. Physiotherapy was continued, and over the next few days the sensation appeared to improve; but then it deteriorated again, until on May 3 (four weeks after admission) anæsthesia in the median-nerve distribution was almost complete and there was in addition paresis of the flexor and abductor pollicis brevis. At this stage there was increased swelling just above the wrist and induration of the skin at the level of the distal palmar crease on the ulnar side of the hand. It was decided that the median nerve should be explored.

Operation

Operation was undertaken (D. B.) on May 5 (one month after admission) under general anæsthesia, with a bloodless field. Through an incision along the medial two-thirds of the distal flexor crease of the wrist and then carried at right-angles to skirt the base of the thenar eminence, the transverse carpal ligament was exposed and completely divided. The flexor tendons were surrounded by gelatinous-looking granulation tissue which appeared to have replaced the tendon sheaths. The median nerve was flattened and almost black from a point about halfway along the carpal tunnel to the lower edge of the retinaculum, beyond which it became normal. Distally the granulation tissue extended deep to the palmar fascia, and pressure over the indurated area in the palm produced a flow of thin pus, which was cultured. The median nerve was dissected free, and the granulation tissue was excised leaving the tendons bare; this excision was carried as far as the distal palmar crease. The tendons themselves for the most part appeared normal, but in places were roughened and hæmorrhagic. The skin was loosely sutured without drainage. The hand was again splinted and elevated, and a further course of penicillin was started.

Progress

The patient's convalescence was satisfactory. On the following day she said that her fingers felt less numb, but on examination no change was found. Sutures were removed on the eighth postoperative day, the wound healing by first intention. Culture of the pus yielded *Staphylococcus albus* sensitive to penicillin and aureomycin. Microscopy of tissue removed at operation showed the changes of non-specific subacute inflammation with young fibrous tissue and endarteritis obliterans of the arteries. Physiotherapy was resumed after removal of the sutures, and the range of movement of the fingers improved steadily. When discharged from hospital on May 19, the patient was complaining of paræsthesiæ in the thumb and radial two and a half fingers; the sensation of light touch was completely absent, but there was some appreciation of pinprick, except in the thumb. She has continued to attend hospital for physiotherapy, and has been examined regularly. When last seen, on Nov. 12 (six months after the operation), the scar was well healed, inconspicuous, and supple, and there was no bulging at the site of division of the retinaculum. Movements of the wrist and digits were painless and full, except for slight limitation of extension of the fingers. There was some impairment of light-touch sensation and an abnormal tingling response to pinprick over the tips of the fingers and thumb; proximally, sensation was normal. It had been noted previously that return of sensation was patchy and did not appear to proceed proximo-distally in a regular manner. There was slight wasting of the thenar eminence; the short flexor and abductor of the thumb showed normal power, but opposition was weak. The patient herself was pleased with the result and announced that she had been able, the previous week, to decorate a room unaided.

CASE 2

A housewife, aged 53, was admitted to hospital on May 2. Thirty-six hours previously she had been pruning some rose trees and thought that she pricked her right thumb on a thorn. Two hours after finishing her gardening she noticed pain and swelling of the right thumb. Shortly afterwards the pain left her thumb and was felt in the palm of the hand opposite the

bases of the index and middle fingers, and at the same time she noticed numbness in the tips of the thumb and index and middle fingers. She went to bed and passed an uncomfortable night. On the following morning the thumb was swollen and slightly red, and the pain in the palm of the hand had increased. She was seen by her doctor, who gave her an injection of penicillin (1,000,000 units) and arranged her admission to University College Hospital.

Examination

Temp. 99°F; pulse-rate 90 per min. The right hand was held in the position of rest. The right thumb was considerably swollen and slightly red, but was not tender; but there was tenderness to deep pressure over the thenar eminence. There was no swelling of the other fingers. On the front of the wrist there was an area of inflammation about one inch in diameter, just proximal to the distal flexor crease on the ulnar side. Movements of the thumb were full and painless; all the other fingers could be fully extended actively, but this caused severe pain in the forearm just above the wrist. The patient complained of numbness in the thumb and lateral two and a half fingers, extending proximally as far as the metacarpophalangeal joints, and on examination there was blunting to pinprick and loss of light touch. There was no lymphangitis, but an epitrochlear gland was palpable. Because of the median-nerve involvement it was decided to explore the wrist.

First Operation

At operation (J. F. B. C.) under general anæsthesia on May 2, a transverse incision one inch long was made across the distal flexor crease of the wrist, and when deepened this released clear yellow fluid. Pressure over the thenar eminence produced further fluid, and a specimen was taken for culture (subsequently found to be sterile). The transverse carpal ligament was divided distally for half an inch, and the tendons and median nerve appeared normal at this level. It was thought that adequate decompression had been effected and nothing further was done. The wound was left open and a plaster front slab was applied over dressings. A course of intramuscular penicillin (250,000 units six-hourly) and streptomycin (0·5 g. twice daily) was started, and the hand and forearm were elevated.

Progress

Three days later the cellulitis at the wrist and tenderness over the thenar eminence had gone and the wound appeared clean; but the index and middle fingers were held in flexion, active extension being impossible and passive extension extremely painful. The thumb still had a full range of painless movement, and the swelling of this digit had decreased. There now was, however, complete sensory loss in the area previously described, and it appeared that further decompression of the carpal tunnel was required.

Second Operation

On May 6, under general anæsthesia and with a bloodless field, the previous incision was reopened (J. F. B. C.), and from the centre of this a second incision was made distally along a convenient skin crease to follow the base of the thenar eminence for one and a half inches. The incision was deepened to expose the transverse carpal ligament, which was then divided completely to expose the tendons and median nerve. There was some yellow serous fluid present. The tendon sheaths were a little œdematous, but the tendons appeared normal. The median nerve at the distal end of the tunnel appeared to be narrowed, as if by compression; there was patchy pink discoloration extending proximally for half an inch. A further specimen of fluid was taken for culture (again sterile). The skin wound was closed, a plaster front-slab applied over dressings, and the arm again elevated.

Progress

Penicillin was discontinued following an allergic reaction, but streptomycin was continued for fourteen days. After the second operation the stiffness and pain on movement gradually left the fingers, but these remained swollen for two weeks. The wound healed by first intention. Active movements and wax baths were started on the sixteenth day, and movements of the fingers gradually improved. There was at this time no change in the sensory loss and the patient still complained of a dull pain across the palm of the hand which was relieved to some extent by warmth. She was discharged from hospital on June 10, when extension of the fingers was almost full and she could make a reasonable fist. The hand throbbed a little when held down, and it ached across the palm at night. Sensation had begun to return in the thumb and lateral half of the ring finger, and she experienced pins-and-needles in these fingers. Sensory loss remained complete in the index and middle fingers. There was no obvious loss of motor power. She continued her physiotherapy as an outpatient and was examined fortnightly. Movement of the fingers was fully restored by the end of July, when swelling of all the digits had completely subsided. The sensation gradually returned to the thumb and fingers, spreading peripherally, and recovery was complete at the end of October; the return of sensation was heralded by considerable cramp-like pain and pins-and-needles. When last seen on Nov. 7 the patient said that in cold weather the thumb and index and middle fingers were blue and felt colder than the rest of the hand. The division of the carpal ligament has not interfered with function, and the linear scar is barely visible.

Discussion

The similarity between these two cases is striking. The early symptoms and the effect on the median nerve were very much alike, and differed only in the time of onset. The findings at operation were rather different, but possibly these represent two stages of the same disease-process; for case 2 was operated on shortly after the original injury, whereas case 1 was operated on after an interval of four weeks. This difference in the time of operation appears to have had little effect on the rate of recovery of the median nerve.

The cause of this condition is obscure; but it seems likely that in both cases infection of the sheath of flexor pollicis longus resulted from a penetrating wound of the thumb, although in neither case was there unequivocal evidence of acute tenosynovitis of this sheath. Judging from the rapid onset of flexion of the fingers with extreme pain on attempted extension, it would appear that infection spread from the radial bursa to the ulnar bursa surrounding the tendons of the deep and superficial flexors of the fingers. In both cases antibiotics were administered early; and probably this was responsible for the sterilisation of the inflammatory fluid in case 2, and for the prevention of an overwhelming infection in both cases. We suggest that interference with the function of the median nerve resulted from compression by inflammatory exudate in the radial and ulnar bursæ deep to the flexor retinaculum, causing ischæmia of the nerve. An alternative explanation is that the signs were produced by spread of infection to the nerve itself, with or without thrombosis of the arterial supply of the nerve. We prefer the hypothesis of compression ischæmia, for several reasons. Firstly, in both cases the appearance of the nerve at operation suggested compression. Secondly, the fact that in both cases the changes in the nerve were strictly confined to the carpal tunnel and did not extend to the proximal and distal limits of the synovial sheaths does not suggest direct spread of infection from these sheaths to the nerve. Thirdly, in case 1 the comparatively late onset of nervous signs, at a time when the infective process had passed its zenith, suggests a pressure effect rather than an infective neuritis. Lastly, the long period required for recovery, and the fact that, despite the different timing of the operation in the two cases, this period was almost exactly the same, are most easily explained on the basis of an ischæmic lesion of the nerve.

In retrospect it appears that in case 1 operation was delayed too long and in case 2 the first operation failed to decompress the carpal tunnel.

As a result of our experience with these two cases, we suggest that any case of acute infection of the hand complicated by signs of interference with the function of the median nerve should be treated by division of the transverse carpal ligament. This division should be done early, before the nerve has been irreversibly damaged; and it should be complete, to provide effective decompression. Complete division can be safely attained only through an extensive skin incision. In neither of these two cases did any disability result from division of the

carpal ligament, and in neither case was there any difficulty in obtaining healing by first intention and an inconspicuous scar.

Summary

Two cases of acute hand infections, following minor trauma to the thumb, were complicated by median-nerve paralysis.

This paralysis was probably due to pressure-ischæmia of the median nerve in the carpal tunnel.

It is suggested that such cases should be treated by early and complete decompression of the carpal tunnel.

We should like to thank Mr. C. W. Flemming and Prof. R. S. Pilcher for permission to publish these cases and for encouragement and help in the preparation of this paper.

THE BASAL METABOLIC RATE DURING SLEEP

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ESTIMATION of the basal metabolic rate (B.M.R.) is probably the simplest way of estimating the activity of the thyroid gland. But, because of the difficulty of consistently achieving the basal state, particularly with nervous patients, it has never been an entirely satisfactory test, and is at the moment less favoured than other and newer diagnostic procedures.

If the technique of Robertson and Reid (1952) is used and duplicate estimations are done daily under ideal surroundings until two readings are obtained that agree within 5%, the results can be reliable. In practice this is not usually possible, and some less time-consuming procedure has to be found if the B.M.R. is to retain its usefulness. Attempts have therefore been made to ensure the patient's basal state by sedation.

Bartels (1949) showed that thiopentone anæsthesia reduced the mean B.M.R. of 17 healthy people from + 4% to − 9% but left that of 13 thyrotoxic patients in the hyperthyroid range. He thought that the procedure might be useful for distinguishing between nervous and thyrotoxic patients.

Rapport et al. (1951) suggested a safer method: the intravenous injection of pentobarbitone sodium ('Nembutal'), which induced only sleep and so avoided the risks of anæsthesia. They showed that the B.M.R. so obtained agreed with the clinical diagnosis in 91% of 200 patients—a much higher correlation than they obtained with the B.M.R. of patients awake. We have found that during sleep the metabolic rate is consistently basal.

We used pentobarbitone sodium in 73 patients according to the method of Rapport et al. (1951), and oral amylobarbitone sodium ('Sodium amytal') in 53 patients, to measure their B.M.R. during sleep, and we report here the encouraging results.

Methods

All the estimations of B.M.R. were made with the Benedict-Roth machine on inpatients who had fasted overnight.

Intravenous Pentobarbitone Sodium.—On the first day a tracing was obtained without sedation. This was repeated next morning, and immediately thereafter the patient was put to sleep with pentobarbitone sodium and a third tracing was obtained. For this last estimation the patient lay on her left side near the edge of the bed, and pentobarbitone sodium 1 ml. (500 mg. in 10 ml.) was injected into the left antecubital vein, followed by 0·5 ml. every minute until the patient was asleep. The dose varied from 125 to 375 mg. but was usually about 200 mg. The depth of sleep varied somewhat from one patient to another but never approached the condition of surgical anæsthesia. The rubber mouth-piece was sometimes introduced before the patient went to sleep; at other times it was inserted during sleep. Occasionally it proved necessary to hold the lips round the mouth-piece to prevent leakage, but we did not make a practice of plastering up the mouth as suggested by Bartels (1949). When the test had been completed, the patients were often given an intramuscular injection of amphetamine sulphate 20 mg., but they remained drowsy and sometimes confused until the afternoon. They did not vomit.

Oral Amylobarbitone Sodium.—The B.M.R. was estimated without sedation on two consecutive mornings as described above. On the third day the patients were given oral amylobarbitone sodium gr. 3 every hour from 6 A.M. until they were unrousable (three or four doses), after which tracings were obtained in the same way as after intravenous pentobarbitone sodium.

Patients Studied.—The B.M.R. was estimated during sleep in most of the patients admitted for investigation of thyroid function since June, 1952. The present analysis includes all those cases in which sleep was satisfactorily induced; attempts to induce sleep with pentobarbitone sodium in 2 cases, and with amylobarbitone sodium in about 30 cases, failed. The patients treated with pentobarbitone sodium were subsequently grouped into six clinical categories (definite and possible myxœdema, euthyroid, definite and possible hyperthyroidism, and "nervous") in the light of clinical findings, the response to treatment, and the results obtained with radio-iodine and other tests. The patients treated with amylobarbitone sodium were fewer and were only subdivided into hypothyroid, euthyroid, and hyperthyroid.

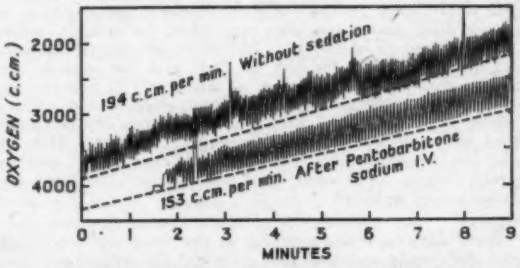

Fig. 1—Two tracings obtained at an interval of about 15 minutes in the same patient: the upper one without sedation, and the lower one with the patient asleep after intravenous injection of pentobarbitone sodium

Results

The tracing made during sleep was usually straighter and smoother than when the patient was awake (fig. 1); and the excursions tended to be smaller and more regular, though this was not invariably so. Fig. 2 shows the effect of intravenous pentobarbitone sodium on the metabolic rate in the six categories of patients studied. In each column the left-hand values represent the lowest B.M.R. obtained without sedation, and the right-hand values represent the B.M.R. during sleep. Each result is expressed as a percentage of the appropriate Robertson and Reid (1952) standard mean. The marked area covers 85–115% of this standard, or the normal range.* It will be seen that the B.M.R. during sleep of

* The normal range is taken by Robertson and Reid (1952) to extend to 2 S.D. either side of the mean; this is usually about ± 15%.

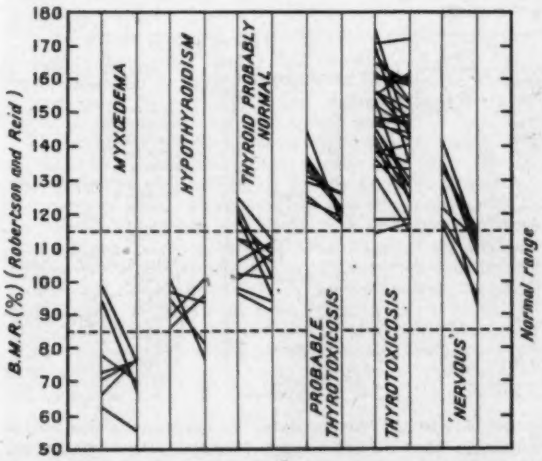

Fig. 2—Effect of intravenous pentobarbitone sodium on the B.M.R. Left-hand point represents lowest estimation of B.M.R. in patient awake, and right-hand point B.M.R. during sleep. Each result is expressed as a percentage of the appropriate Robertson and Reid mean. Interrupted lines mark the approximate limits of the normal range.

euthyroid patients fell within this normal range; indeed such B.M.R. were more closely clustered round the mean than were the preceding B.M.R. measured with the patient awake. Similarly, most of the patients in the other groups did not show much alteration in B.M.R. when they went to sleep, with the striking exception of the "nervous" patients, in all of whom the reading dropped to within the normal range.

Fig. 3 shows the results obtained with amylobarbitone sodium when the patient had been sufficiently sedated to sleep through the procedure. The cases were fewer, but the trend was the same as after pentobarbitone sodium: in most euthyroid patients the B.M.R. during sleep was normal, whereas in thyrotoxic patients it was high and in myxœdema it was low. In one patient the B.M.R. during sleep after oral amylobarbitone sodium was high, but subsequently it was normal after intravenous pentobarbitone sodium, which fact suggests that this patient was not really asleep after amylobarbitone sodium.

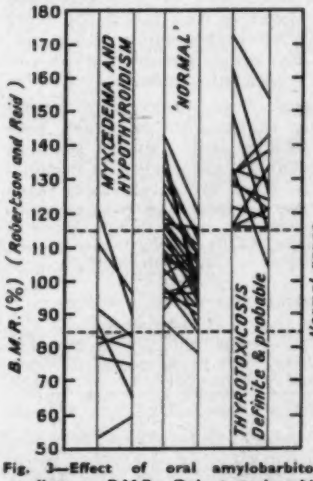

Fig. 3—Effect of oral amylobarbitone sodium on B.M.R. Only tests in which the patient was sleeping are included. Results expressed in the same way as in fig. 2.

Comments

We have come to regard the estimation of the B.M.R. during sleep as eliminating one of the main sources of error in assessing thyroid function by the measurement of oxygen consumption. We are satisfied that the B.M.R. during sleep of euthyroid persons does not fall below the normal standards of Robertson and Reid (1952), and that of definitely hyperthyroid patients is above this normal range. We believe that the patients must be really asleep at the time of the test, and that partial sedation is as likely to excite them as to calm them. Heavy oral sedation is probably adequate in most cases, but occasionally it may be necessary to use intravenous pentobarbitone sodium. We are aware that ideally it should not be necessary to put patients to sleep to induce a basal state, but we gather that ours is not the only hospital where it has often proved extremely hard to obtain a reliable B.M.R. with the patient awake.

When a B.M.R. has been estimated during sleep, it is important to use standards referable to a truly basal state, such as those of Robertson and Reid (1952). Only for the Robertson and Reid standards were the healthy people first given practice runs until two readings agreeing within 5% were attained. A B.M.R. expressed as a percentage of the age and sex mean value of these Robertson and Reid standards will be about 10% higher than when it is related to any of the older standards.

We have had no untoward experiences with intravenous pentobarbitone sodium, which acts slowly and is generally considered to be extremely safe. We wish to emphasise that the patients under the influence of pentobarbitone sodium are asleep and not anæsthetised, inasmuch as vigorous efforts can rouse them, and their reflexes remain unaltered. The only serious disadvantage of the procedures we have described is that the patients remain drowsy and occasionally restless for the rest of the day. The reliability of the results obtained probably justifies this inconvenience.

Summary

Intravenous pentobarbitone sodium was given to 73 patients for the estimation of the B.M.R. during sleep.

The B.M.R. during sleep is abnormally high in thyrotoxic patients, within the normal range in euthyroid and "nervous" patients, and low in myxœdema.

Sleep was also induced with oral amylobarbitone sodium in 53 patients, and rather similar results were obtained.

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RUPTURE OF LAPAROTOMY WOUNDS

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THE incidence of wound disruption or "burst abdomen" is undoubtedly higher than is generally realised. Milbert (1935) found 20 cases of partial or complete disruption in 1560 laparotomies (1·3%); and Wolff (1950), reporting 45 cases in 1700 consecutive abdominal operations (2·6%), states that the incidence based on published reports is 0–3%. These figures take no account of incisional herniæ, which may be regarded as "bursts" beneath an intact skin closure, discovered usually after the discharge of the patient from hospital. Romanis and Mitchiner (1937) estimate the incidence of incisional hernia at 4%; hence the total incidence of wound dehiscence may be up to 7% of all abdominal incisions.

I report here the results of an investigation made at a provincial hospital into the possible causes of wound disruption.

Method

A two-page questionnaire was prepared, to be completed at the time of the resuture, covering the patient's preoperative condition, operative details, and findings at the time of the repair.

TABLE I—EARLY BURSTS

Age (yr.)	Incision	Operation	Suture material	Tension sutures	Post-operative distension	Cough	Ambulant	Day of disruption	State of suture material
52	Paramedian	Appendicectomy	Catgut	Yes	..	+	No	4	Broken
64	Midline	Gastrectomy	Catgut	Yes	..	..	No	4	Broken
68	Paramedian	Gastrectomy	Catgut	Yes	..	++	No	5	Broken
60	Paramedian	Gastrectomy	Catgut	Yes	..	+	Yes	7	Broken
70	Kocher	Choledochostomy	Catgut	Yes	+	..	No	7	Torn through tissues
51	Paramedian	Laparotomy	Catgut	Yes	..	+	No record	5	Broken
10	Paramedian	Repair of ileum	Catgut	No	+	..	No	1	Broken
79	Paramedian	Gastrectomy	Catgut and nylon	No	+	..	No	7	Broken
65	Midline	Gastrectomy	Catgut	No	+	..	Yes	7	Broken
70	Paramedian	Gastrojejunostomy	Catgut	Yes	+++	..	No	6	None found
72	Paramedian	Gastrojejunostomy	Catgut	No	..	++	No	5	Torn through tissues
45	Paramedian	Hysterectomy	Catgut	No	..	+	No record	7	Broken
73	Paramedian	Gastrectomy	Catgut	Yes	..	+	No	3	Broken
73	Paramedian	Abdominoperineal	Catgut	No	..	..	No	3	Broken
63	Paramedian	Repair of ventral hernia	Silk	No	..	+	No	5	Torn through tissues
41	Paramedian	Cholecystectomy	Catgut	Yes	..	..	No	1	Broken
64	Paramedian	Abdominoperineal	Catgut and nylon	Yes	..	..	No record	2	Broken
68	Paramedian	Laparotomy	Catgut	Yes	..	..	No	7	Broken

Results

"Bursts" followed 28 of 2039 operations (1·4%). One questionnaire was completed inadequately, leaving 27 cases for analysis.

The cases fell into two main groups: an early group in which the disruption took place in the first seven days, and a late group in which the wound gave way on the ninth or a subsequent day. In the latter group every case showed either a low serum-protein level or a local condition of the wound (either hæmatoma or sepsis, or both) to account for delay in healing and consequent disruption when the suture material ceased to hold.

It is the early group, comprising 18 cases, to which particular attention is to be paid, for it is the surgeon's duty to ensure that his closure will withstand all strains put on it until sound healing has taken place. The nature of the strain is therefore really irrelevant to the issue, but in this connection one clinical observation is worth mentioning. When a conscious postoperative patient coughs, he does so with due care and support of his abdomen. In the theatre removal of an endotracheal tube, or aspiration of mucus through the tube, when the plane of anæsthesia is rapidly lightening can lead to most violent coughing in a still unconscious patient. The wound is unsupported, and the abdominal muscles can be seen standing out in powerful contraction. It may well be that some disruptions are thus initiated by breaking of the suture material or tearing out of sutures, and in fact 2 of the wounds did burst in twenty-four hours owing to broken catgut.

Of the 18 cases, the suture material was found broken in 14 and had torn through the tissues in 3 (and in 1 of the late group), and in the remaining case no trace of the catgut was found on the sixth day. The postoperative days on which abdominal viscera burst through the skin are shown in tables I and II. The burst is always accompanied by serous fluid, often bloodstained. In many cases similar fluid oozes from the wound for several days beforehand, indicating that the deeper layers have given way at this earlier date. So constant is this serous discharge that its appearance presages either disruption of the wound or an incisional hernia.

Discussion

Nature of Suture Material

Table I shows that in this series both catgut and nylon had broken, whereas there is no instance of silk having done so. There is no record of the strength of the catgut used, but in most cases it would be no. 1 or no. 2 20-day chromic. Whatever the nature of the material there is no doubt that it is sometimes faulty when handed to the surgeon, either from age, repeated boiling, prolonged storage in phenol, or, in the case of catgut, by fraying on the broken glasss of the ampoule. It has been my custom for some time to attempt to break the suture material before use, and it is possible to do so easily with disconcerting frequency. If a steady pull in the surgeon's hands does not break it (nearly always one can do so with a sudden tug), the patient's abdominal muscles are unlikely to do so.

Faulty Use of Material

A double knot tied in catgut is unsafe. Experiments showed that such a knot can often be untied by a steady pull on the long end. Even three loops on the knot is not entirely safe, unless the short end is left at least $^1/_4$ inch long, and this is still true if the first two loops form a reef-knot. It is therefore wise to cut the short end and to test the knot before proceeding with a continuous suture, so that any slipping under tension can be observed and another suture substituted.

Other faults, which have been observed in several hospitals, are attempting to close the abdomen with inadequate relaxation, leading inevitably to tears in the tissues during the procedure; and seizing the material with the needle-holder to draw the suture tight (such crushing must weaken the material and predispose to breaking).

TABLE II—LATE BURSTS

Age (yr.)	Incision	Operation	Ambulant	Post-operative distension	Cough	Wound hæmatoma	Wound sepsis	Serum-protein level (g. per 100 ml.)	Day of burst
72	Paramedian	Laparotomy	No	+++	..	No	Yes	6·8	12
48	,,	Laparotomy	No	+	..	No	Yes	4·7	13
72	,,	Ileo-transverse colostomy	No record	..	+	No	Yes	5·5	10
55	,,	Gastrojejunostomy	Yes	..	+	No	No	5·7	11
35	,,	Resection of jejunum	No record	..	..	No	Yes	3·9	9
76	,,	Gastrojejunostomy	No record	+	+	No	Yes	5·8	11
73	,,	Laparotomy	No	..	..	No	Yes	6·6	13
71	,,	Transplantation of ureters	No	+	..	Yes	No	6·1	10
54	,,	Resection of colon	No	+	..	No	Yes	5·4	12

Method of Suture

"The fatter the patient, the thinner the peritoneum" is almost invariably true, and obesity has long been cited as a factor in wound disruption. It is clearly unwise in such cases, when sutures tear through the tissues so easily, to rely on a continuous suture alone.

The weakness of an investigation such as this, which collects data after the event, is the lack of controls. The record of the method of suture depends largely on the memory of the house-surgeon and the consistency of the surgeon concerned in his technique of closure. Again, in the absence of a record of the frequency with which various methods were used, one cannot draw conclusions about their relative efficiency. Nevertheless the fact that tension sutures had been used in 17 of these 27 disruptions casts doubt on their usefulness. Moreover in 22 cases simple continuous sutures had been used for both layers, which fact, with 15 cases of breakage of the material, confirms the impression that this method of suture is not without risk.

Ambulation

Of the 27 patients 17 had not been out of bed at the time of the disruption, 4 were ambulant, and in 6 there is no record. These figures, though small, confirm the opinion of Leithauser (1943) and Nelson (1944) that early ambulation has little effect on the incidence of dehiscence.

Incision

In the absence of controls no conclusion can be drawn on the relative merits of the various incisions in common use. In this series 16 disruptions were through upper abdominal incisions (1 Kocher, 2 midline, and 13 paramedian), and 8 through lower abdominal incisions (all paramedian). This point is discussed by Wolff (1950), who worked out the disruption-rate for each of the common incisions, and concluded that the small differences for site and type of incision have no statistical significance. He suggests that increased intra-abdominal pressure, which theoretically should be exerted equally in all directions, is of more importance than the direction of muscle pull in disrupting the wound. The importance of increased intra-abdominal pressure cannot be doubted, and in this series most of the patients had postoperative distension or cough.

Mortality

In this series the disruption was considered to have been responsible for the deaths of 5 patients: from paralytic ileus in 1 and from chest complications in 4.

Summary

The results of an investigation into the cause of "burst abdomen" are recorded.

The cases fall naturally into early and late groups.

Many of the early group are perhaps avoidable.

My thanks are due to the surgeons of the Brighton and Lewes Hospital Group for access to their patients; and particularly to Mr. H. J. McCurrich and Mr. K. W. Powell, who instigated the work, for their help and constant interest.

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"... Dr. Weir Mitchell tells of once sending a colleague to see an old Quaker lady. Next time he saw her she said to him, 'Never send that man to see me again. Thee knowest I do not like to have my feelings poulticed.'"—Prof. JOSEPH FLETCHER, *Morals and Medicine*. London, 1955; p. 54.

INFECTION WITH CRYPTOCOCCUS NEOFORMANS IN MAN

REPORT OF TWO CASES

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SINCE the original publication of Busse (1894) and Buschke (1895) of a case of human torulosis * there have been numerous reports of this condition, particularly from the United States and Australia. Collins et al. (1951) review 241 collected cases, to which they add 2 of their own. In contrast to the frequency of this disease in other countries its incidence in Great Britain appears to be low; for Symmers (1953), who reported 2 cases, could find only 8 cases previously published in this country.

Torulosis has an insidious onset and a protracted course, most commonly declares itself when the central nervous system has become affected, and then usually progresses to a fatal termination within one to four months. In a few cases reviewed by Linden and Steffen (1954) the infecting agent appears to have remained localised at the site of entry, which is thought to be most often the lung.

In view of the paucity of symptoms reported in pulmonary cryptococcosis, and the tendency of cryptococcal infection to simulate other diseases, it is not unlikely that it may be either overlooked or wrongly diagnosed. Thus it may be more common than appears from the number of published cases.

For this reason we report our 2 cases. The first was originally diagnosed as Hodgkin's disease until terminal meningitis revealed the true nature of the illness, and the 2nd case was recognised as pulmonary cryptococcosis only after resection.

Case-reports

Case 1.—A man, aged 27, was discharged from the Army in 1947 with the diagnosis of Hodgkin's disease, which had been established by biopsy of a cervical lymph-node. Unfortunately the slide made from this biopsy specimen could not be traced. The patient subsequently received deep X-ray treatment for three years. He was admitted on Aug. 21, 1950, to the North West Branch, Royal Free Hospital, with three months' history of loss of use of his right hand and three weeks' history of intense headache, giddiness, muscular weakness, and vomiting. He had some memory defect and delusions and had lately developed diplopia.

On admission he was lethargic, and his speech was slurred. He had severe neck rigidity, a positive Brudzinski's sign, bilateral papilloedema, right external-rectus palsy, and left lower facial weakness. His tendon-reflexes were diminished, and he had general weakness of all his limbs.

Pathological Investigations.—The cerebrospinal fluid (C.S.F.) was under a pressure of more than 300 mm. and contained 46 cells per c.mm. (lymphocytes 88%), protein 90 mg. per 100 ml., an excess of globulin, chlorides 670 mg. per 100 ml., and sugar 28 mg. per 100 ml. A gram-stained film revealed numerous yeast-like bodies, which were later identified as *Cryptococcus neoformans*. Culture on blood-agar yielded a

* In accordance with modern terminology the name *Cryptococcus neoformans* has been adopted for the organism causing this condition.

visible growth of this organism after twenty-four hours. A white-cell count showed 14,400 leucocytes per c.mm. (polymorphs 87%, lymphocytes 6%, monocytes 7%). The urine contained a trace of albumin and a few leucocytes; culture produced a few colonies of enterococci.

Treatment and Progress.—The patient received daily intrathecal streptomycin 0·1 g. and penicillin 10,000 units, intramuscular streptomycin 1 g. and penicillin 3 mega units, and 'Sulphatriad' 8 g. by mouth. There was no change in his condition, and his C.S.F. continued to harbour numerous cryptococci. His temperature, which had been normal on admission, gradually rose to 103°F, and he died in coma on Aug. 28, 1950.

Necropsy Findings.—The C.S.F. was turbid, and the surface of the brain showed flattening of convolutions; there were no macroscopic gelatinous granulations in or beneath the pia-arachnoid. The *lungs* had undergone much post-mortem

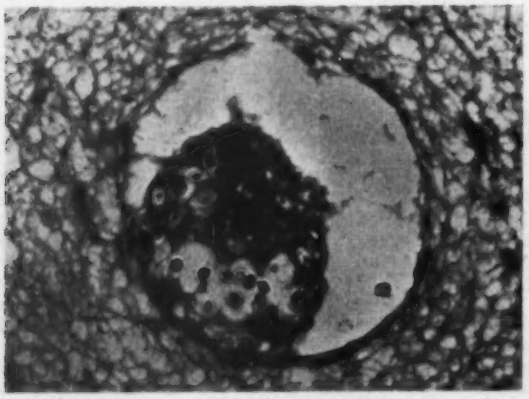

Fig. 1—Case 1: cortical "cyst" of brain containing numerous cryptococci. (Hæmatoxylin and eosin. × 450.)

autolysis, but there was evidence of incipient suppurative bronchopneumonia in both lower lobes. The *abdominal glands* in the root of the mesentery and the para-aortic and cœliac groups of glands were moderately enlarged. The *liver* resembled hepar lobatum with coarse scarring; its cut surface was mottled and pale. The *spleen* was enlarged to about four times its normal size, and section revealed scattered nodules of soft whitish tissue up to 1·5 cm. in diameter. The left *psoas major muscle* contained a mass of soft whitish tissue, which was about 7 cm. in diameter and had eroded the transverse process of the third lumbar vertebra. The *axillary and inguinal glands* were slightly enlarged and firm; their cut surface did not reveal any gross abnormality.

Histology.—The *meninges* showed a sparse cellular infiltrate consisting of lymphocytes, plasma-cells, macrophages, and a few multinucleated giant-cells, with numerous cryptococci lying freely between these cells or being phagocytosed by macrophages and giant-cells. The inflammatory infiltration extended along the perivascular spaces into the cortex, which showed a few small cystic areas stuffed with cryptococci and a few inflammatory cells (fig. 1). The *spleen* (fig. 2) was engorged and showed well-defined and sharply demarcated areas of infiltration with pleomorphic tissue resembling that found in Hodgkin's disease and composed mainly of lymphocytes and large hyperchromatic cells with giant indented or lobed nuclei; occasionally a binucleated cell of the Reed-Sternberg type was seen. No eosinophils were present. A similar type of tissue was found in the para-aortic, mediastinal, and supraclavicular *lymph-glands*, in the last two surviving only as small scattered areas amidst dense post-irradiation fibrosis. The mass in the *psoas major muscle* (fig. 3) again was composed of similar tissue, but here the large hyperchromatic cells were more numerous and the appearances tended to resemble those of Hodgkin sarcoma. The *liver* showed fibrous thickening of the capsule and was intersected by broad bands of fibrous tissue in which only a few small collections of lymphocytes were seen. The *kidneys* contained small areas of lymphocytic infiltration in the cortex, in which occasionally cryptococci were found. No cryptococci were seen in the tissue resembling that of Hodgkin's disease in the spleen, lymph-glands, and psoas, nor were they found in the liver.

Fig. 4—Case 2: tomogram of left lung, showing several cavities at base.

Description of Organism.—Microscopically the organism displayed the characteristic appearances of *Cryptococcus neoformans*: round or ovoid bodies showing budding, and staining (in sections) bright red with mucicarmine and with periodic-acid-Schiff stain. Each body was surrounded by an unstained capsule, which could be seen in preparations of the C.S.F. deposit stained with nigrosin. The organism grew well on agar and Sabouraud's medium both at room-temperature and at 37°C. The colonies were smooth, entire, greyish, and of buttery consistence, later becoming mucoid. No mycelium was formed in culture. The organism fermented glucose and sucrose, with the formation of acid only. Mannite, dulcitol, lactose, maltose, sorbitol, and inosite were not split. Liquefaction of gelatin was not observed during

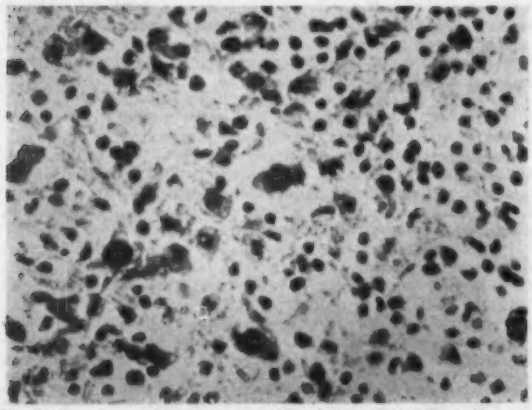

Fig. 2—Case 1: splenic tissue resembling lesion of Hodgkin's disease. (Hæmatoxylin and eosin. × 450.)

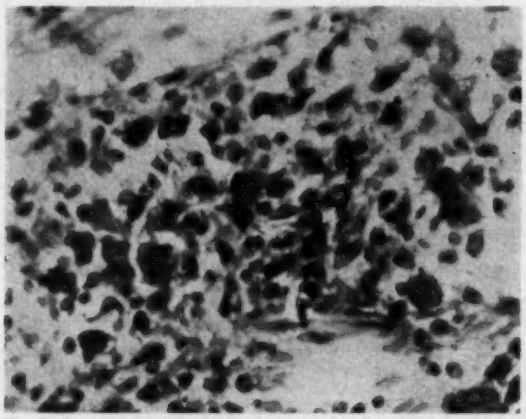

Fig. 3—Case 1: section of mass in psoas, showing tissue resembling Hodgkin sarcoma. (Hæmatoxylin and eosin. × 450.)

incubation for four weeks. In routine sensitivity tests with impregnated discs the organism was resistant to sulphathiazole, penicillin, streptomycin, chloromycetin, aureomycin, oxytetracycline, and polymyxin. It was virulent for both mice and guineapigs. A mouse injected intraperitoneally with 0·25 ml. of a heavy suspension from a Sabouraud culture died seven days later; cryptococci were recovered from its peritoneum and brain. Similarly a guineapig injected intraperitoneally with 1 ml. of c.s.f. died fourty-four days later from generalised infection; cryptococci were present in sections of brain, spleen, liver, kidney, lung, and inguinal and iliac lymph-glands.

Case 2.—A male shorthand-typist, aged 32, was admitted on Jan. 4, 1954, to the thoracic unit of St. Charles' Hospital for investigation of a lesion at the base of his left lung, which had been found in August, 1953, by routine mass miniature radiography. He complained of some pain in the left side of his chest which was not pleuritic in type. He had no cough or other symptoms suggesting a chest infection. A course of penicillin given before his admission had not changed his X-ray shadows. He had served in South Africa, Italy, and France in the 1939–45 war and had been discharged from the Royal Air Force in 1946 because of loss of sight in his right eye. In 1949 the left eye also became affected. He was investigated at two hospitals, and Eale's disease was diagnosed. There was no evidence of tuberculosis, and a Mantoux test was negative. At one time retinoscopy was said to have revealed perivascular choroidal "tubercles," and on the assumption that his condition was tuberculous the patient was given a prolonged course of streptomycin (total 200 g.) followed by streptomycin in combination with *p*-aminosalicylic acid and later isoniazid. His eye condition, however, did not improve after this treatment.

Fig. 5—Case 2: left basal segments of lung, showing infiltration and cavitation.

On admission his general condition was good. He was apyrexial, and there were no abnormal chest signs. He was totally blind in his right eye, and the visual acuity of the left eye was 6/12. Radiography of his chest (fig. 4) revealed rounded opacities with thick-walled cavities in the left lower lobe. The patient did not produce any sputum, and nine laryngeal swab cultures, as well as a culture of bronchial washings, did not produce tubercle bacilli. The erythrocyte-sedimentation rate (Westergren) was 7 mm. in the first hour. A Mantoux test was positive in a dilution of 1 : 10,000. A blood-count was normal, and the Wassermann reaction and a Kahn test were negative.

Treatment and Progress.—Despite the negative results of culture the lesion was thought to be tuberculous, and after a short preparatory course of streptomycin and *p*-aminosalicylic acid a left basal segmental resection was done by one of us (A. R. M.) on Jan. 15, 1954. The patient made an uneventful recovery and was discharged from hospital on Feb. 13, 1954.

Operation Specimen (fig. 5).—The anterior basal segment showed two large subpleural greenish yellow nodules. Further small nodules were palpable in the deeper parts of the basal segments. On section the cut surface revealed nodular areas of greyish yellow infiltration varying in diameter from a few millimetres to 2 cm. The larger nodules tended to coalesce and showed central cavitation. There was some fibrosis at the periphery of the lesions and a small area of collapse in the middle basal segment, with occlusion of the corresponding subsegmental bronchus. Microscopy of the nodular areas (fig. 6) showed that the lung parenchyma had been superseded by granulomatous tissue composed of numerous giant-cells of foreign-body type, macrophages, lymphocytes, and fibroblasts. The larger lesions showed central necrosis and cavitation surrounded by fibrous tissue. At the periphery of the nodules the alveoli had thickened walls and contained in their lumen collections of giant-cells and macrophages. Throughout the lesion these cells were stuffed with highly refractile spheroid bodies (fig. 7), which were 5–10 μ in diameter and were surrounded by a halo 7–17 μ in diameter. With hæmatoxylin and eosin their outline was only faintly stained, but they were easily recognised by their high refractility. In sections stained with periodic-acid-Schiff stain they appeared faintly pink, with a distinct red outline and an occasional bright-red dot in their centre or at their periphery. The halo remained unstained. These bodies were numerous throughout the lesion and were also found lying freely between the granuloma cells. They were shown to Dr. R. W. Riddell, of the department of bacteriology, Brompton Hospital, who confirmed the diagnosis of *Cryptococcus neoformans*. Unfortunately the nature of this lesion was only realised on histological examination of the excised lung. Attempts to isolate the organism from the formalin-fixed tissue three weeks after operation were unsuccessful. Sections of parabronchial lymph-glands from the excised specimen did not reveal any granulomatous tissue.

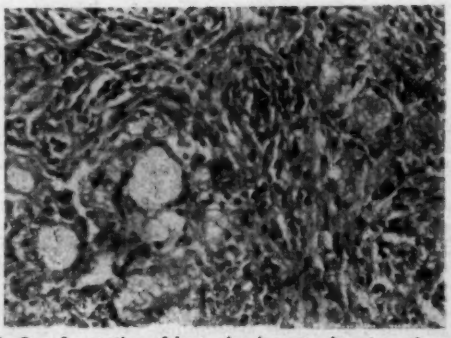

Fig. 6—Case 2: section of lung, showing granulomatous tissue with giant cells containing cryptococci. (Hæmatoxylin and eosin. × 175.)

Follow-up.—The patient has remained well for thirteen months after operation. Repeated postoperative laryngeal swabs and urine cultures for cryptococci have been negative.

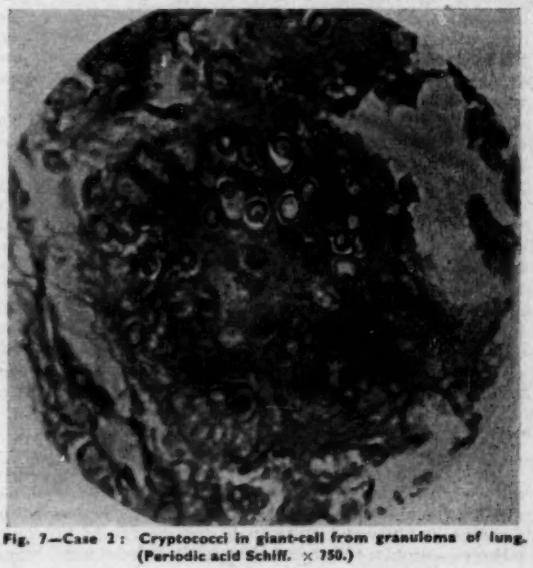

Fig. 7—Case 2: Cryptococci in giant-cell from granuloma of lung. (Periodic acid Schiff. × 750.)

and radiography of the lungs and skeleton has revealed no abnormality. Lumbar puncture was not done, because it was felt that it might possibly be harmful to the patient.

Discussion

Cases 1 and 2 illustrate the varied clinical manifestations by which cryptococcal infection may declare itself for the first time. The association with lesions resembling those of Hodgkin's disease, seen in our first patient, has been reported before. Cox and Tolhurst (1946), in their review of 100 cases of torulosis, estimate its frequency to be at least 5%, whereas Collins et al. (1951) found it in 11 of the 243 cases reviewed by them. This frequency is too high to be fortuitous and suggests either an increased liability to fungus infection of patients with Hodgkin's disease or a causal relationship between the fungus and the lesions resembling those of Hodgkin's disease. Our failure to find cryptococci in these lesions does not exclude the second possibility, since in most of the published cases cryptococci were either not demonstrable in the tissue resembling that of Hodgkin's disease or were present only in very small numbers. If the glandular enlargement which led to the diagnosis of Hodgkin's disease in case 1 is taken as the earliest manifestation of his infection, his illness lasted at least four years. The diagnosis of his terminal meningitis did not offer any difficulties, because cryptococci were easily demonstrated both in direct films and by culture of the C.S.F.

The first manifestation of cryptococcal infection in case 2 was probably the eye lesion which led to his loss of vision. Cryptococcal chorioretinitis leading to extensive intraocular destruction has been reported so far in 4 cases, reviewed by Wager and Calhoun (1954). The underlying pathological lesions are necrotising granulomata in which cryptococci have been demonstrated both by culture (Weiss et al. 1948) and in stained sections. The perivascular choroidal "tubercles" reported in case 2 may well have been such granulomata. This assumption receives further support from the negative result of the Mantoux test at the time these eye lesions were seen and from the absence of pulmonary tuberculosis. It therefore seems that he became infected before his discharge from the Royal Air Force and at least seven years before his lung condition was diagnosed. The chance finding of this extensive lesion by mass miniature radiography emphasises the insidiousness of cryptococcal infection. Since it was thought to be tuberculous and its nature was only recognised after histological examination of the operation specimen, the diagnosis of cryptococcal infection is based entirely on the morphological and tinctorial appearances of the organism in sections. We believe, however, that these were definite enough to justify our diagnosis.

Although case 2 has so far remained well for thirteen months after his operation, the long-term outlook as regards his freedom from further evidence of infection is uncertain. "Cures" of pulmonary cryptococcosis by excision of the affected lung have been reported and are reviewed by Corpe and Parr (1954); but, in view of the protracted course of this infection, the period of observation in many of these cases cannot be considered adequate. Even follow-up periods of four years (Baker 1952, case 3) and five and a half years (Froio and Bailey 1949) after lobectomy fall within the range of latency observed in torulosis. Unfortunately there is not yet a chemotherapeutic agent of established value against cryptococci which could be used as a supplement to surgical measures.

Summary

2 cases of cryptococcal infection are reported.

Case 1, was regarded for four years as one of Hodgkin's disease until the true diagnosis was revealed by terminal meningitis and the demonstration of *Cryptococcus neoformans* in films and cultures of the C.S.F. At necropsy lesions resembling those of Hodgkin's disease were found in the spleen, some lymph-glands, and the left psoas major muscle.

Case 2 presented as localised pulmonary cryptococcosis, which was treated by segmental resection. Seven years previously he had developed chorioretinitis, which led to blindness and, we believe, was caused also by cryptococci.

We wish to thank Dr. W. Gunn and Mr. C. A. Jackson, F.R.C.S., for permission to publish these cases, and Dr. Riddell for help in identifying the organism in case 2. The original isolation of the organism from the C.S.F. of case 1 was the work of the late Dr. George Stephen. Acknowledgments are also due to Mr. Sheppard and Mr. Kemp for the photographs.

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PROLONGED JAUNDICE WITH UNIDENTIFIED PIGMENT IN LIVER CELLS

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A NEW liver disease was described by Dubin and Johnson (1954), who reported 12 cases of chronic or intermittent jaundice which affected young people and was usually manifested by pain in the upper right abdominal quandrant, mild jaundice, fatigue, slight enlargement of the liver, and dark urine. The jaundice lasted from a few months to several years, fluctuated in intensity, and was aggravated by intercurrent disease. The prognosis was very good. Laboratory examinations revealed bilirubinæmia, a raised direct van den Bergh reaction, retention of 10–30% of bromsulphalein, cephalin flocculation and thymol turbidity often positive, and bilirubinuria. The gall-bladder did not show up on cholecystography. Liver biopsy revealed always normal hepatic structure without any signs of either inflammation or fibrosis. A coarsely granular, amorphous, greenish-brown pigment was found in the central cells of the lobules. Macroscopically the liver was dark green, slate grey, or black. Dubin and Johnson could not identify the pigment, which shared some chemical properties with ceroid and lipochrome pigments.

These cases differ from those reported by Gilbert and Lereboullet (1901), Rozendaal et al. (1935), and Dameshek and Singer (1941) as familial non-hæmolytic jaundice or constitutional hepatic dysfunction, in which the bilirubin was of the indirect type, there was no bilirubinuria, the liver was not enlarged, liver-function was usually normal in spite of jaundice, and any pigment present was finely granular. The cases reported by Dubin and Johnson could readily be distinguished from hæmolytic, obstructive, and infectious jaundice. (See also *Lancet* 1954.)

We report here a case which came under our observation.

Case-report

A married woman, aged 28, of German origin was admitted to this hospital in June, 1954, with six years' history of

jaundice. Nothing relevant was found in her past history and in her family history. Six years ago, when she noticed the jaundice for the first time, her only other complaint was vague epigastric pain. After two months the jaundice became less intense but did not disappear completely. The patient felt well all the time. During the following years the jaundice fluctuated in intensity but was always present. A month before admission, she was found, on a routine gynæcological examination, to be in the sixth month of pregnancy and, because of the jaundice, was directed to our ward.

On examination she was well nourished and in good general health. Her scleræ and skin were yellowish, and her liver extended to 4 cm. below the costal margin. The size of her uterus was consistent with seven months' pregnancy. Nothing abnormal was found elsewhere.

Investigations.—Examination of the patient's blood showed Hb 9·9 g. per 100 ml.; leucocytes 5300 per c.mm (differential count normal); reticulocytes 1%; erythrocyte-sedimentation rate (E.S.R.) 20 mm. in 1st hr. (Westergren); serum-protein 7·4 g. per 100 ml. (serum-albumin 4·6 g. per 100 ml. serum-globulin 2·8 g. per 100 ml.); serum cholesterol 202 mg. per 100 ml., serum-cholesterol esters 132 mg. per 100 ml.; serum-alkaline phosphatase 1·5 Bodansky units; serum-bilirubin 3·0 mg. per 100 ml. (direct 1·8 mg. per 100 ml., indirect 1·2 mg. per 100 ml.); prothrombin-time 100%; thymol flocculation negative; thymol turbidity 6–7; Kahn test negative. The urine contained bilirubin and more urobilinogen than usual. In blood-smears no spherocytes were seen. The fragility test gave normal values, the Coombs test was negative, and no cold agglutinins were found. No ova, parasites, or amœbæ were found in the stools. The fæcal excretion of stercobilinogen was 115 mg. in twenty-four hours. The gall-bladder did not fill after a double dose of oral dye. Fluoroscopy of the chest was negative.

Progress.—During three weeks in hospital the patient's condition did not change, and the laboratory findings remained constant. Chronic hepatitis was diagnosed, and the patient was advised to come back for further investigation after the birth of her child.

Readmission.—In November, 1954, the patient was readmitted to the hospital for further examination. Two weeks previously she had been delivered of a child that died soon afterwards. The cause of death was not definitely established.

On examination the patient's condition was essentially the same as on the previous admission. She felt well and was apyrexial; her liver extended 4 cm. below the costal margin, and her scleræ and skin were yellow.

Investigations.—Examination of her blood showed Hb 11·8 g. per 100 ml.; leucocytes 5400 per c.mm.; E.S.R. 26 mm. in 1st hr. (Westergen); serum-protein level normal; serum-alkaline phosphatase 1·35 Bodansky units; serum-bilirubin 4·8 mg. per 100 ml. (direct bilirubin 3·6 mg. per 100 ml. and indirect 1·2 mg. per 100 ml); thymol turbidity 5–6; thymol flocculation negative; bromsulphalein retention 28% after 45 minutes; plasma-iron 113 μg. per 100 ml. The gall-bladder did not fill when dye was given by mouth. Liver biopsy showed a normal parenchyma without distortion of structure. No signs of cellular infiltration and fibrosis were noted. Many liver cells, mostly in the centres of lobules, contained numerous granules of brownish pigment which gave a negative reaction for bile and iron. The bile-ducts were not distended. The biopsy specimen was dark green.

Progress.—The patient was discharged from hospital without a clear-cut diagnosis and was advised to eat plenty of proteins and vitamins.

Readmission.—In January, 1955, the patient was admitted for a third time. At home she had felt well except for a dull constant pain in the right hypochondrium.

On examination she was jaundiced, her liver was of the same size as before, and enlargement of her spleen was doubtful. Hepatic function, bromsulphalein retention (29%), bilirubin, thymol turbidity and flocculation, serum-alkaline phosphatase, serum-proteins, and liver biopsy showed no change. The gall-bladder still did not fill with dye, and radiography of the stomach was normal. On two occasions there was retention of water after drinking 1200 ml., as in diseases of the hepatic parenchyma.

Comments

The present case closely resembles those described by Dubin and Johnson (1954) and Sprinz and Nelson (1954). When the patient was first admitted with six years' history of jaundice, we considered chronic hepatitis or incomplete obstruction of bile-ducts as a possible diagnosis; but liver biopsy revealed a perfectly normal structure, the only abnormality being a brownish coarse pigmentation of the liver cells. Clinical and laboratory examinations did not show any signs of obstruction of the bile-ducts or hæmolysis. There was no history of peptic ulcer, colitis, or other chronic gastro-intestinal disturbance. Despite the prolonged jaundice the patient was in excellent general health.

We are inclined to agree with Dubin and Johnson (1954) that the disease is a new clinicopathological entity and probably represents an inborn error of metabolism. It seems that bilirubin, bromsulphalein, the pigment that accumulates in the liver cells, and the dyes used in cholecystography cannot be properly excreted.

Since the disease does not seem to inconvenience the patient much, and the prognosis appears to be good, its recognition is of great importance. Before the publication of the paper by Dubin and Johnson we were considering exploratory laparotomy; probably many such patients have undergone operation in the past. This disease can easily be diagnosed by liver biopsy.

Summary

A case is reported of a new liver disease first described by Dubin and Johnson (1954).

The patient was a young woman who for six years had had continuous jaundice without its affecting her excellent general health.

Clinical examination revealed nothing abnormal except jaundice and slight enlargement of the liver. Laboratory examination revealed a raised serum-bilirubin level, mainly of the direct type, and increased retention of bromsulphalein. The gall-bladder did not fill with opaque dye.

The disease was diagnosed by liver biopsy, which revealed a characteristic brownish pigment in the liver cells.

We wish to thank Dr. H. Spitz, our pathologist, whose coöperation made this work possible.

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ACUTE YELLOW PHOSPHORUS POISONING WITH RECOVERY

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RAT-POISON is freely available to the general public and may contain appreciable amounts of inorganic yellow phosphorus. Cases of phosphorus poisoning, although infrequent, occur from time to time either with suicidal intent or, more rarely, accidentally.

We report here a case in which recovery followed the ingestion of about 500 mg. of yellow phosphorus. This quantity must be considered highly lethal; Sollmann (1948) states that the fatal dose is generally about 100 mg. The variability of the clinical picture is well exemplified in the present case.

Case-report

A widow, aged 71, was admitted on the evening of Sept. 14 (day 1) having taken about 500 mg. of yellow phosphorus in the form of 'Rodine,' a rat-poison containing 2% *w/w* of the

FINDINGS IN ACUTE YELLOW PHOSPHORUS POISONING

Day	4	5	7	9	10	15	16	22	37	42
Blood-urea level (mg. per 100 ml.)	..	122·0	..	130·0	..	..	58·0	46·0	30·0*	..
Serum-sodium level (mg. per 100 ml.)	..	275·0	285·0	280·0	..	..	315·0	320·0	325·0	..
Serum-potassium level	..	17·5	18·0	..	..	..	13·5	23·0	18·0	..
Plasma-chloride level (mg. per 100 ml.)	..	445·0	421·0	..	..	..	538·0	620·0	573·0	..
Plasma-bicarbonate level (vols. CO_2 %)	..	..	..	..	..	..	68·0	53·0	53·0	..
Serum-phosphorus level (mg. per 100 ml.)	..	..	..	3·1	..	..	2·4	3·3	3·2	..
Serum-calcium level (mg. per 100 ml.)	..	..	5·8	6·2	..	..	6·6	8·3	9·5	..
Serum-bilirubin level (mg. per 100 ml.)	..	10·0	16·0	..	..	16·0	..	2·6	1·4	0·7
A/G ratio	..	4·3/2·3	3·6/1·5	..	..	2·1/2·5	..	2·3/3·0	2·9/3·4	..
Thymol turbidity (units)	..	1·2	1·0	..	..	2·5	..	1·4	2·3	..
Alkaline phosphatase (K.-A. units)	..	19·0	..	..	..	26·0	..	31·0	19·0	..
Prothrombin (%)	..	..	23·0	..	..	..	70·0	..	100·0	..
Hb % (Haldane)	..	72·0	..	..	76·0	..	..	38·0	76·0	80·0

* Urea clearance 63 % of average normal.

element. For some months previously she had become increasingly depressed when she was left alone in her house for long periods, and at noon on the day of admission she consumed the dose spread on a slice of bread-and-butter. Eight hours later she arrived at the hospital having vomited once at home.

On admission her condition gave rise to no anxiety. She was alert and coöperative, with regular pulse, pulse-rate 100, blood-pressure 135/90 mm. Hg, and temperature 98°F. There was no evidence of icterus or of petechial hæmorrhages in the skin. The lungs and cardiovascular and central nervous systems were essentially within normal limits, apart from some thickening of the peripheral vessels. The abdomen exhibited a large incisional hernia (cholecystectomy in 1952) through which the liver was just palpable below the right costal margin. No other viscera were palpable. The urine contained no albumin, sugar, or bile pigments.

Treatment and Progress.—The stomach was washed out with copious amounts of water, and magnesium sulphate was put down the stomach-tube (unfortunately the gastric return was not available for inspection), and after this the patient spent a restful night.

Day 2.—The patient remained well and took a full diet. There was no further vomiting, and there was no evidence of icterus.

Day 3.—In the evening the patient was first noticed to be faintly jaundiced, although making no complaints.

Day 4.—Her condition rapidly deteriorated, and by 8 A.M. she was semi-stuporose. Obvious icterus was present, the skin cold and pale, the pulse impalpable, and the blood-pressure non-recordable. The liver edge was now easily palpable through the incisional hernia about two finger-breadths below the costal margin and tender. The urine was scanty and loaded with albumin and bile pigments. Delayed phosphorus poisoning with acute hepatic and circulatory failure was diagnosed. A 5% dextrose infusion was set up and l-noradrenaline 4 mg. per litre was added to the drip, which was adjusted to maintain the systolic blood-pressure between 100 and 120 mm. Hg. There was a most gratifying response; the radial pulse became palpable, and the blood-pressure rose rapidly. Intramuscular penicillin 500,000 units was given six-hourly. Despite the improvement in her peripheral circulation the patient relapsed into deep coma, and the depth of icterus increased.

Day 5.—Her condition continued to deteriorate, the jaundice became deeper, and the liver had enlarged to the level of the umbilicus. Generalised coarse muscle fasciculation was observed, although Chvostek's and Trousseau's signs were negative, and the plantar responses became extensor. Parenteral vitamin therapy was started, and a "vitamin cocktail" was made up containing the following substances in a pint of glucose-saline solution:

Aneurine	50 mg.
Nicotinamide	150 mg.
Riboflavine	50 mg.
Vitamin B_{12}	200 µg.
Vitamin K	200 mg.

A pint of this infusion was given daily. In view of Walshe's (1953) suggestion that glutamic acid should be used in the treatment of hepatic coma, treatment was started with sodium glutamate two pints daily (sodium glutamate 23 g. in a pint of 5% dextrose). The noradrenaline drip was also continued, increasing amounts being required to maintain the blood-pressure.

Day 7.—The patient remained in deep coma. 10% calcium gluconate was given to raise the low serum-calcium level (see table).

Day 8.—Some improvement in the patient's general condition was noted, and it was now possible to reduce the amounts of noradrenaline without a fall in the blood-pressure.

Day 9.—The degree of coma was appreciably lighter, and the liver was thought to be decreasing. The noradrenaline drip was discontinued.

Day 11.—The patient could obey simple commands and take fluids by mouth. Intravenous therapy was therefore discontinued.

Day 15.—The patient was now fully coöperative, the jaundice was appreciably less, and the liver had decreased further and was much less tender. A high-protein high-carbohydrate diet was instituted with added 'Casilan,' vitamin supplements, and methionine 1 g. t.d.s.

Day 16.—Potassium chloride 2 g. t.d.s. was given by mouth to correct the low serum-potassium level (see table).

Day 22.—During the course of her illness the patient had become progressively anæmic; and in view of a hæmoglobin level of 38% (Haldane) she was transfused with two pints of packed red cells.

Further Progress.—From this time onwards she made steady progress; her blood biochemistry returned to normal and the serum-bilirubin level fell to within normal limits (see table). Apart from a troublesome pressure-sore she was symptom-free and said she had not felt so well for many years.

Discussion

Phosphorus occurs in two forms: (1) the red amorphous variety, which is stable, insoluble, non-absorbable, and therefore for practical purposes non-toxic when taken by mouth; and (2) yellow phosphorus, which is relatively unstable, soluble in fats and bile, and highly toxic. The minimal lethal dose of ingested yellow phosphorus is 50 mg. (Sollmann 1948), but as little as 15 mg. of it may cause untoward symptoms. Díaz-Rivera et al. (1950), however, reported recovery after the ingestion of 780 mg. Previously survival after taking 200–400 mg. was rare, and no survival had been reported after the ingestion of more than 400 mg. (Bayne et al. 1952).

Yellow phosphorus is a powerful protoplasmic poison, producing its main effects on liver, kidneys, heart, and brain. Impaired glycogenesis leads to depletion of liver glycogen and is followed by fatty infiltration of liver, kidneys, heart, and other organs. Liver-biopsy specimens have presented the appearances of periportal fibrosis in the recovery phase (La Due et al. 1944).

The typical picture of phosphorus poisoning falls into two distinct stages separated by a variable interval. The first stage is one of gastro-intestinal irritation, comes on within a few hours, and is characterised by thirst, nausea, vomiting, hæmatemesis, "garlic" eructations, and epigastric discomfort. This stage usually lasts about twenty-four hours and is followed by a period of apparent well-being—the latent period—lasting from a few hours to a few days, the length being conditioned by the rate of absorption of the phosphorus. The second, or systemic, stage is characterised by nausea, vomiting, abdominal

pain, icterus, a tender palpable liver, hæmorrhages, peripheral circulatory collapse, oliguria, coma, and death, and depends on hepatic, renal, and cardiac failure.

Deviations from the above are emphasised by Dìaz-Rivera et al. (1950) in that patients who have consumed large amounts of phosphorus may die within the first twelve hours from peripheral circulatory collapse, and indeed the great majority of patients may die before the appearance of a clear-cut picture of hepatic damage.

The appreciaton of the latent period by the physician is of prime importance because it may lead to a false sense of security, the patient being discharged from hospital before the onset of the systemic stage, as in the case reported by Wechsler and Wechsler (1951).

The experience of Dìaz-Rivera et al. (1950) in 56 cases suggests that the present case had many grave prognostic features: a fairly considerable dose of poison, minimal emesis, considerable delay before gastric lavage was instituted, and, especially, the onset of the systemic stage with peripheral circulatory collapse and non-recordable blood-pressure. This last feature is usually accepted as an indication of impending death. By contrast, encouraging features were the facts that the phosphorus was contained in a solid vehicle and that there was a long delay before the onset of the systemic stage.

All workers are agreed that the treatment of the peripheral circulatory collapse in this condition is most unsatisfactory. Dìaz-Rivera et al. (1950) state that "the signs of shock early in the course of the disease is one of the most important therapeutic problems since the physician is helpless from the start." In the light of this statement the response and maintenance of our patient's blood-pressure by noradrenaline for six days must be considered most satisfactory, and it therefore seems that, with noradrenaline now generally available, further improvement in the prognosis of yellow-phosphorus poisoning may be anticipated. The mortality in the Puerto Riço series of Dìaz-Rivera et al. (1950) was 48%, a large proportion of the fatal cases showing the "shock syndrome." We feel that treatment with noradrenaline would have lowered this encouraging figure.

The treatment of acute hepatic necrosis in the systemic stage does not appear to differ from the régime suggested by Latner (1950). The use of glutamic acid may be worthy of further trial, but we were not impressed by its effect in the present case.

Of prime importance, however, is therapy directed to the elimination of the phosphorus before it is absorbed. This should include thorough gastric lavage with 1 : 1000 solution of potassium permanganate to oxidise the phosphorus to phosphates, followed by the administration of 200 ml. of mineral oil—e.g., liquid paraffin—which is a good solvent of phosphorus, helps to prevent its absorption, and hastens its elimination.

Summary

A case of yellow-phosphorus poisoning with recovery after the ingestion of about 500 mg. is recorded.

The use of noradrenaline in the treatment of peripheral circulatory collapse in this condition and the importance of early therapy are emphasised.

We wish to thank Dr. N. Kletts for permission to publish this case, and for his helpful criticism and advice.

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PURE RED-CELL APLASIA SUCCESSFULLY TREATED WITH COBALT

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PURE red-cell aplasia is aplasia of the red-cell-forming tissue of the bone-marrow and leads to chronic refractory anæmia. Unlike what happens in the condition generally termed aplastic anæmia (an unsatisfactory description in view of the hæmatological findings), in pure red-cell aplasia the bone-marrow and the peripheral blood show failure of development of the erythroid series alone, granulocytopoiesis and the production of platelets being normal.

We report the following case because this condition is rare, because treatment with cobalt was apparently successful, and to point out the diagnostic features, for without careful interpretation of the bone-marrow cytology cases will pass unrecognised.

Case-report

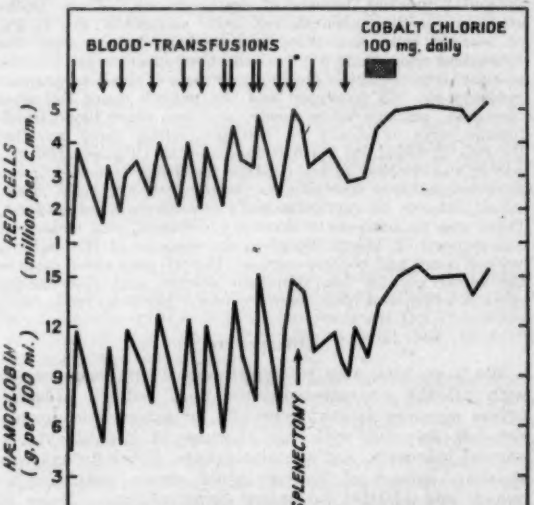
A spinster, aged 49, was admitted to Leeds General Infirmary under the care of Dr. I. Macpherson on Aug. 12, 1952, with four weeks' history of loss of energy, dyspnœa on exertion, and increasing pallor.

On examination she was very obese and severely anæmic, with slight sacral œdema and a functional systolic murmur audible at the cardiac apex. There was no splenomegaly, lymphadenopathy, or other positive finding.

Blood examination showed Hb 4·5 g. per 100 ml., red cells 1,250,000 per c.mm., reticulocytes 0·1%, packed cell volume 12%, mean corpuscular volume 96 c.μ, mean corpuscular Hb concentration 36%, white cells 7600 per c.mm. (polymorphs 69%, lymphocytes 29%, monocytes 2%), platelets 350,000 per c.mm., and blood-group O Rh-positive. A blood-film showed anisocytosis and macrocytosis.

Sternal bone-marrow was cellular, with evidence of much depression of erythropoiesis, red-cell precursors representing only 4% of the total marrow cells. All cells of the erythroid series were either pro-erythroblasts or early normoblasts, suggesting arrested maturation. Granulocytopoiesis and the development of platelets were seen to be taking place normally.

Other Investigations.—The urine was normal. A fractional test-meal showed histamine-fast achlorhydria. Radiography


BLOOD-TRANSFUSIONS
COBALT CHLORIDE
100 mg. daily
RED CELLS (million per c.mm.)
HAEMOGLOBIN (g. per 100 ml.)
SPLENECTOMY
0 2 4 6 8 10 12 14 16 18 20 22 24 26
MONTHS

Treatment and progress.

of the chest, a barium meal, and a barium enema gave normal results, and examination of the fæces for occult blood was negative. The blood-cholesterol level was 0·11 g. per 100 ml. Electrocardiography showed no abnormality.

Treatment and Progress.—After a transfusion of packed red cells the Hb increased to 11·8 g. per 100 ml. (see figure) and the patient was discharged on Aug. 23, 1952, symptom-free and was told to attend as an outpatient. In the succeeding six months she was admitted to St. James's Hospital, Leeds, four times for blood-transfusion.

Investigations.—A urea-clearance test showed no impairment of renal function, and intravenous pyelography showed a normal renal tract. Further radiography of the chest and alimentary tract and repeated testing of the fæces for occult blood were negative. The fæces contained 19·9 g. of fat per 100 g. of dried fæces (split 70%, unsplit 30%). The serum-alkaline-phosphatase level was 8·25 units, and radiography of the skeleton showed nothing abnormal. The serum-bilirubin level was 0·2 mg. per 100 ml. The fæces contained 48·5 mg. of urobilinogen per 100 g., and the urine 0·4 mg. of urobilinogen per 100 ml. The indirect Coombs test and Schumm's test were negative. Repeated examinations of the blood showed macrocytic normochromic anæmia with almost no evidence of red-cell regeneration, judged by the absence of reticulocytes in the peripheral blood and severe diminution of red-cell precursors in the bone-marrow. The bone-marrow, however, on all occasions showed that granulocytopoiesis and the formation of platelets were taking place normally, and the leucocytes and platelets in the peripheral blood remained at a normal level.

Treatment and Progress.—Treatment up to March, 1953, had consisted of repeated blood-transfusions. Oral and intravenous iron and liver extracts had been tried, somewhat empirically because there was no evidence of deficiency of iron or of hæmopoietic principle. Neither treatment had any effect on the blood picture. From March until August, 1953, various other preparations were prescribed, including vitamin B_{12}, folic acid, citrovorum factor, ascorbic acid, and various other vitamins, but all proved ineffective. Corticotrophin and cortisone, thyroid extract, and stilbœstrol were also of no value, and during this five-month period a further four blood-transfusions were required. After careful consideration the patient was advised to undergo splenectomy. This seemed justifiable because Loeb (1951) had reported a patient with pure red-cell aplasia who had obtained temporary benefit from this operation. She was therefore readmitted to hospital on Sept. 4, 1953.

Operation.—After further blood-transfusions splenectomy was done on Oct. 2 by Mr. D. B. Feather, F.R.C.S. Pathological examination of the spleen revealed no significant abnormality.

Postoperatively repeated examinations of the bone-marrow showed a gradual increase of erythropoiesis. Three weeks after operation nucleated red cells accounted for 13·2% of marrow cells, and three months after splenectomy the figure had risen to 22·4% and the bone-marrow picture was normal. Irrespective of this improvement of the bone-marrow cytology the Hb decreased and the red-cell count fell after operation, perhaps more slowly, and two more blood-transfusions were necessary in the succeeding three months. By Feb. 2, 1954, the Hb had decreased to 10 g. per 100 ml., and it was decided to try cobalt. No drugs had been given since splenectomy four months previously. For eight weeks cobalt chloride 50 mg. twice daily was given in tablet form. There was an immediate sustained response, and treatment was stopped on March 29, when the amount of Hb and the red-cell count had become normal. For the past seven months the blood picture has remained normal and the patient symptom-free, and no further treatment has been required.

Discussion

We have been able to collect only 19 published cases with all the characteristics of pure red-cell aplasia: severe normocytic normochromic, or macrocytic normochromic anæmia with an absence of reticulocytosis, normal leucocyte and platelet-counts, and bone-marrow showing aplasia of the erythroid series, granulocytopoiesis and platelet formation being normal. Many of these cases have been referred to by Seaman and Koler (1953) and Foy and Kondi (1953), who also reported examples of their own. Additional cases have been recorded by Donnelly (1953), Robson and Sweeney (1948), and Aldridge and Kidd (1953). Other previously published cases resembling pure red-cell aplasia have been excluded because of a lack of necessary data, such as bone-marrow studies, or because of coexisting leucopenia or thrombocytopenia.

The ætiology of pure red-cell aplasia is obscure. Males seem to be more affected than females; and, whereas 13 of the 19 cases started in adult life, infants were affected in the remaining 6, the anæmia being noticed at birth or shortly afterwards. This finding suggests that there may be two forms of pure red-cell aplasia: congenital and acquired. In most cases the cause is unknown, but toxic agents and infection have been suggested. Smith (1949) suggested that, in his own case (in a child), the anti-A agglutinin elaborated by the mother in pregnancy may have been to blame, although such a mechanism has not been proved by other workers. Stronger evidence of a toxic factor is given by Strauss (1943), who described the onset of pure red-cell aplasia during sulphonamide therapy; the cessation of treatment led to immediate spontaneous recovery. Seaman and Koler (1953) also described a case where sulphonamides may have been a predisposing agent.

Treatment in all but 4 cases has proved ineffective. Blood-transfusions have produced temporary symptomatic improvement, but the condition has eventually proved fatal. One patient recovered spontaneously (Strauss 1943), and Loeb (1951) noticed temporary improvement following splenectomy and treatment with corticotrophin and cortisone. Splenectomy, however, although followed by improvement in the bone-marrow picture, failed in the present case to increase the Hb and red cells, and corticotrophin and cortisone were both ineffective. Foy and Kondi (1953) described a maximal reticulocyte response with complete hæmatological recovery following the administration of riboflavine; and (unknown to us at the time) Seaman and Koler (1953) reported full recovery in a patient after two months' treatment with cobalt chloride.

The influence of cobalt on erythropoiesis in animals has been known for several years. Waltner and Waltner (1929) showed that an excess of cobalt given to animals produced a polycythæmic state, an observation which has been confirmed by numerous investigators using different species of animals. A deficiency of cobalt in certain species leads to anæmia (Filmer 1933, Cartwright 1947). Although there is no evidence that a true deficiency of cobalt occurs in man, these observations on animals and more recently the detection of an atom of cobalt in the molecule of vitamin B_{12} have led to many reports of the effect of cobalt in patients with various refractory anæmias. Beneficial effects have been reported in the anæmias associated with chronic infection (Robinson et al. 1949), chronic renal disease (Gardner 1953), cancer (Shen and Homburger 1951), sickle-cell anæmia (Wolf and Levy 1954), and Mediterranean anæmia (Muratore 1951).

The satisfactory response to oral cobalt in the present case of pure red-cell aplasia supports the observations of Seaman and Koler (1953). Although the follow-up in both cases is still too short for us to be certain that a permanent cure has taken place, an early trial of cobalt therapy in the treatment of this rare and generally fatal disorder of erythropoiesis is indicated.

Summary

A case of pure red-cell aplasia in a woman aged 49 is described in which complete hæmatological recovery followed two months' treatment with cobalt chloride.

Previous treatment with iron, liver extracts, vitamin B_{12}, folic acid, citrovorum factor, œstrogens, thyroid extract, and corticotrophin and cortisone was ineffective, and blood-transfusions were only of temporary benefit.

Splenectomy led to an increase in red-cell precursors in the bone-marrow but no increase in Hb and red cells.

We thank Dr. I. Macpherson for permission to study and publish this case.

ADDENDUM

Since this paper was submitted, J. N. M. Chalmers and K. Boheimer (*Brit. med. J.* 1954, ii, 1514) have reported two cases of pure red-cell aplasia associated with thymic tumours. In one temporary hæmatological improvement followed thymectomy and both benefited from treatment with corticotrophin. In the present case there was no obvious evidence of a thymic tumour.

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Medical Societies

ROYAL SOCIETY OF MEDICINE

Coronary-artery Disease

A JOINT meeting of the sections of epidemiology and preventive medicine and of pathology was held on March 1, under the chairmanship of Prof. L. P. GARROD, to discuss coronary-artery disease.

MORPHOLOGY

Prof. T. CRAWFORD opened the discussion with an account of the morbid-anatomical features of coronary atherosclerosis, emphasising that the effects of plaques on the calibre of the lumen was difficult to assess. The usual macroscopic examination of the coronary arteries at necropsy was inadequate; he made three-dimensional radiographic studies, after injection of a radio-opaque material. Examples of such radiographs contrasted the healthy coronary tree with one which was grossly irregular owing to atherosclerosis. Slides showed the much thicker intima in normal coronary arteries than in other arteries; others demonstrated early intimal lesions with thickening and a small amount of fat.

Such fat might be distributed either in patches or diffusely. Later this fatty material became separated from the lumen by a laminated layer of collagen. Thrombosis might be followed by retraction, and a further increase in the thickness of the intima. Alternatively the thrombus might organise and recanalise.

Duguid's work, showing the part played in the production of atheromatous plaques by repeated deposition of fibrin on the intima, was most important. Incomplete organisation of these deposits led to appearances which were indistinguishable from the classical atheromatous plaque. Intimal thrombosis was, however, only a stage in the development of the fully formed lesion.

EXPERIMENTAL ATHEROSCLEROSIS

Dr. J. E. FRENCH noted that atherosclerosis occurred spontaneously only in man. It could be produced experimentally in various animals—in rabbits and chicks by excessive cholesterol feeding, in dogs by this method combined with impairment of thyroid function, and in cebus monkeys by an excess of dietary cholesterol after a diet deficient in methionine. Rats were particularly resistant to cholesterol feeding. Except for some lesions in the rat, these experimental lesions consisted essentially of lipoid accumulations. They had this in common with the fully developed lesions of atherosclerosis in man, and the chemical composition of the lipoid suggested that it originated from plasma-lipoids. In animals in which atherosclerosis was produced experimentally:

1. Hypercholesterolæmia was common to all, except in rats where lesions could be produced solely by a dietary deficiency of choline.

2. The severity of the atherosclerotic lesions was not directly related to absolute concentration of plasma-cholesterol; the "stability" of the plasma-cholesterol as a colloidal solution was more important.

It appeared that the distribution of cholesterol between the lipoproteins and the larger β-lipoproteins was similar in animals and in man. In dogs there was normally a plasma-cholesterol concentration similar to that in man; but in dogs 80% was associated with α-lipoprotein, compared with 20% in man. As experimental atheroma developed in the dog an increasing amount of cholesterol became associated with the β-lipoprotein fraction. Eventually this greatly exceeded the α-lipoprotein fraction. It had been suggested that the presence of a high concentration of cholesterol containing β-lipoprotein in the blood was a significant factor in atherogenesis.

Gofman and his collaborators had furthered the theory of the importance of the β-lipoproteins in atherogenesis, and separated the β-lipoprotein complex into parts with different densities (measured in Svedborg units of flotation). A significant degree of correlation had been claimed between lipoprotein components of S_f 10–30 and the development of experimental atheroma in animals. The S_f 10–30 lipoproteins had also been identified in the blood of cebus monkeys with atheroma.

The S_f 10–30 lipoproteins, although macromolecules, did not appear to be responsible for the visible lipæmia in cholesterol-fed rabbits. Much of this was due to visible lipoid particles which could be separated by centrifugation at relatively low speeds. Chylomicra, occurring in the blood of normal animals after ingestion of lipoid, appeared to be broken down to a more diffusible form by a similar process to that in heparin clearing. But the visible lipoid particles in the blood of cholesterol-fed rabbits seemed to be removed from the blood only by phagocytosis.

The method by which abnormal lipoid crossed the endothelial lining, to be deposited in the intima, was widely considered to be one of filtration. Acceptance of this hypothesis was implicit in Gofman's theory of atherogenesis. An alternative was that foam-cells adhere to the aortic endothelium, and are either overgrown by it or else migrate inwards. It had been suggested that unstable plasma-lipoid material might behave similarly. Experiments could help to determine whether atheroma began under or over the endothelium.

DIET IN PATHOGENESIS

Prof. H. W. FULLERTON considered briefly the evidence that there was an association between atheroma and a high dietary intake of fat. He accepted the contention of Duguid that fibrin deposits formed the essential starting-point of atheroma.

The dietary intake of fat had been increasing for many years in this country along with growth in incomes; and so had the incidence of coronary thrombosis, usually regarded as secondary to atheroma. Two further points linked the intake of dietary fat with the incidence of coronary thrombosis: Keys had shown that the mortality from degenerative heart-disease was higher in countries whose inhabitants had high intakes of dietary fat than in others; and mortality from cardiovascular diseases appeared to decrease in Norway during the 1939–45 war.

He had found experimentally that reduced clotting-time was associated with the lipæmia which followed a meal rich in fat, and that this increased blood coagulability was present only when the intake of fat was high. He therefore suggested that one factor responsible for the intermittent deposition of fibrin on the arterial intima was the ingestion of meals rich in fat. There was probably considerable individual variation in this mechanism, and also possibly a sex difference. The lipæmia following fat ingestion was certainly greater in elderly subjects and in those with coronary-artery disease. Fibrinolysis might also be important in coronary thrombosis. The question of coronary thrombosis must be considered in the light of any theory of the pathogenesis of atheroma.

EPIDEMIOLOGY OF CORONARY ATHEROMA

Dr. J. N. MORRIS considered the problem in its public-health setting. Secular trends in mortality-rates showed a slowing in the fall of the male death-rate in middle age during the past thirty years; this slowing was not evident in the female death-rate. Duodenal ulceration, ischæmic heart-disease, and bronchial carcinoma affecting males especially, and common in middle age, were mainly responsible for these trends. Ischæmic heart-disease was the biggest single factor. Social class I, the inhabitants of large towns, and physically inactive workers—bus-drivers as opposed to conductors—had the worst records for this disease. Farmers and agricultural workers were particularly free of it.

Epidemiologically, a pathological study of coronary atherosclerosis was needed. Dr. Morris had appealed to pathologists throughout the country for data; and there had been a very generous response. Analyses of pooled hospital necropsy records, now being made and adjusted to give an idea of what was happening in the population as a whole, showed that the proportion of men with much coronary atherosclerosis steadily increased to as high as 20–25% by the age of 70 years; and the proportion with stenosis in a main coronary artery to 30–35%. Those dying of hypertension had substantially more coronary atherosclerosis than the rest of the population. In a fifth of the deaths from ischæmic heart-disease nothing particular in the way of coronary atherosclerosis was found; but the majority did have a considerable amount. Dr. Morris emphasised that although many were susceptible to ischæmic heart-disease by virtue of the condition of their coronary arteries, it developed in only a minority of these. There was no 1 : 1 relation between coronary atherosclerosis and ischæmic heart-disease; no increase of coronary atherosclerosis alone in the population had been found, for instance, in recent years. He considered the factors that were needed for the conversion of the pathological entity, coronary atherosclerosis, into clinical ischæmic heart-disease; and the need to identify causes in the environment that were related to this conversion.

DISCUSSION

In the discussion that followed, Dr. Z. A. LEITNER was gratified that Professor Fullerton supported his postulate about the importance of increased dietary fat intake in atherogenesis.[1 2] He presented further evidence that many of the known causes in the development of atherosclerosis, including such hypothetical ones as physical and emotional stress, raised the blood-lipid levels. He drew attention to the biochemical differences in the proportion of the α and β lipoprotein fractions between males and females—a difference which apparently could be influenced by hormone administration. The very pronounced and characteristic increase of the β-lipoprotein fraction in males seemed to be related to the greater incidence of coronary accidents in males, and clinical trials on a considerable scale were proceeding in several centres to correlate the therapeutic decrease of the β-lipoprotein levels in males suffering from coronary disease with their subsequent clinical condition.

1. *Lancet*, 1954, i, 1078.
2. *Med. World, Lond.* 1954, **81**, 249.

MANCHESTER MEDICAL SOCIETY AND LIVERPOOL MEDICAL INSTITUTION

A JOINT meeting was held in Manchester on March 2, under the chairmanship of Dr. H. P. FAY, president of the Manchester Medical Society.

Virus of Varicella and Zoster

Prof. A. W. DOWNIE said that association of chickenpox with zoster is well recognised, in that child contacts of zoster cases not infrequently develop a clinical infection indistinguishable from chickenpox. Yet, because of the difference in clinical picture and pathology, and the difference in age and seasonal incidence, there has been some hesitation in accepting the thesis that zoster is an infection with varicella virus. Three different views seem to be held: (1) that one virus causes the two conditions; (2) that the two clinical entities are due to different but closely related viruses; and (3) that some cases of zoster, but only some, are caused by varicella virus. The recent investigations of Hope Simpson [1] in one of the Shetland Isles seem to show conclusively that the chickenpox derived from zoster cases is in no way different from ordinary chickenpox. The clinical picture, interval between serial cases, and infectiousness are the same; and an attack of the one kind of chickenpox confers immunity to the other. The experimental infections of children with zoster-vesicle fluid by Kundratitz and by Bruusgaard show that such infections sometimes result in clinically typical chickenpox which leaves an immunity to further inoculation with vesicle fluid from zoster or chickenpox cases.

Laboratory investigations have been hampered by lack of susceptible laboratory animals, but such information as is available reveals no differences between the virus from chickenpox and zoster patients. The histological features of the skin lesions are the same; by electron microscopy the virus particles are identical and are agglutinated by convalescent serum from either type of case. Antigen in vesicle fluids cross-reacts completely in complement-fixation tests with convalescent sera. Recently Weller has infected tissue-cultures of human tissue with virus from vesicle fluid of zoster and chickenpox patients. Both materials produce the same kind of cytopathogenic effects with the appearance of multinucleated cells and typical intranuclear inclusions in the cells of the lesion. By an ingenious indirect technique using fluorescent antibody he has shown that infected cells in tissue-culture bind antibody in convalescent sera from either zoster or chickenpox cases.

The laboratory findings therefore support the view based on clinical and epidemiological observations that zoster is a particular kind of infection with varicella virus. The facts that zoster usually occurs at an older age than varicella, that the majority of zoster patients have previously had varicella years previously, and that zoster commonly arises in persons having no known contact with varicella or zoster cases and may be precipitated by X irradiation, trauma of injection, &c., suggest that zoster in many instances is due to activation of a latent virus in persons whose general immunity may have waned.

Some Methods of Investigating Inherited Factors in Disease

Dr. C. A. CLARKE first discussed the ABO blood-groups as a polymorphic system and explained that, because the percentage in the population remained constant, equil-

1. Hope Simpson, R. E. *Lancet*, 1954, ii, 1299.

ibrium must be maintained by a balance of advantages and disadvantages. He recalled the work of Aird and his colleagues, who in 1953 had shown that there was an association between carcinoma of the stomach and blood-group A. In the following year the same workers had noted that peptic ulcer was associated with a marked excess of group O.

Dr. Clarke gave the results of a similar investigation in Liverpool. From three hospitals 1497 cases of ulcer had been analysed and it had been found that whereas the distribution of the blood-groups in gastric ulcer was normal, in duodenal ulcer there was a distinct swing to O from A; 59·6% of the cases were O and only 29% A, the corresponding control figures being 49·1% O and 40·9% A.

The control series had been obtained from two sources: (1) the over-all blood-group distribution of the three hospitals, excluding ulcers, in 1948–54; and (2) blood-donors obtained from the Nuffield Blood Group Centre. As no significant difference had been found between these two sets of controls, that from the hospitals had been used because it was much bigger (15,377 cases).

Dr. Clarke considered whether the association between blood-group O and duodenal ulcer might be due to miscegenation rather than to causal relation. An analysis of duodenal ulcer *within* families was helping to solve this problem. The number of sibships so far investigated was only 53; this was not nearly enough to allow of any definite conclusion, but the current data did give a hint that the association was present within the families.

Because of the reciprocal relation between group O and group A in respect of duodenal ulcer and cancer of the stomach, it was worth investigating other diseases in which the secretion of hydrochloric acid was abnormal. Buchanan and Higley [2] had shown that in 457 cases of pernicious anæmia there was a higher incidence of group A at the expense of O than in the general population. Dr. Clarke thought that this finding supported his idea that the ABO locus might contain one genetic factor responsible for the amount of hydrochloric acid secreted, O in the direction of hyperchlorhydria and A in the direction of hypochlorhydria.

Turning next to diabetes mellitus, in which duodenal ulcer is rare and achlorhydria rather common, Dr. Clarke described an analysis by R. B. McConnell on the blood-group distribution of 815 diabetics from the diabetic clinic at the David Lewis Northern Hospital, Liverpool.[3] This showed that in the under-30 age-group (131 cases), mainly consisting of patients (predominantly male) who were non-obese and who required insulin, there was a swing of 12% from group O to group A compared with the controls ($\chi^2 = 8{\cdot}21$). In the older age-group, usually associated with obesity and insulin insensitivity, the blood-group distribution was normal. He believed that the finding in the younger age-group might support his hypothesis, and the next step was to find out the age-incidence and blood-group distribution of achlorhydria in diabetics.

Dr. Clarke showed how the ABO blood-groups were of use as marker genes. He described a linkage between the ABO locus and hereditary onycho-osteo-dystrophy (nail-patella syndrome), recently discovered by Renwick and Lawler [4] at the Galton Laboratory.

In the third part of the paper he described how testicular biopsies obtained from fertility clinics provided excellent material for human chromosome studies. The idea had come from Mr. J. H. Burnett, D.PHIL., of the department of botany, and emphasised the value of coöperation between university departments.

2. Buchanan, J. A., Higley, E. T. *Brit. J. exp. Path.* 1921, **2**, 247.
3. McConnell, R. B. *Proc. R. Soc. Med.* (in the press).
4. Renwick, J. H., Lawler, S. D. Paper read to Genetical Society, Nov. 20, 1954.

Reviews of Books

Artificial Respiration

With Special Emphasis on the Holger-Nielsen Method. T. O. GARLAND, M.A., M.D., D.P.H. London: Faber & Faber. 1955. Pp. 60. 6*s*. 6*d*.

THIS short book will be useful to all concerned in teaching and practising resuscitation. It is practical, giving enough theory only to make it clear why some manœuvres produce better results than others.

The emphasis is mainly on the now officially recommended Holger-Nielsen method, and secondarily on the Silvester and Eve rocking methods. Other and older manœuvres are briefly described. An interesting account is given of the observations originally made by Pask in Oxford—courageous observations, all too rarely mentioned, which were the forerunners of the intensive and important work done later in the U.S.A. A few tables show clearly the large ventilation induced by the Holger-Nielsen method as compared with others, particularly the Schäfer method. The photographs are clear; and one subtly emphasises that the Holger-Nielsen method does not need muscular strength by showing a young girl applying it to a man.

The author points out that efficient first-aiders should know more methods than one, since no one method is suited to all circumstances. He describes how artificial respiration may be applied with the patient in a sitting position where it is not possible for him to be laid down, as in a small boat, or in pole-top rescue after electrocution when speed of treatment is even more desirable than usual. He also describes how the rocking method may be applied for short periods and immediately in rescue to both children and adults. He recommends (what is now agreed) that oxygen rather than a mixture of oxygen and carbon dioxide should be used for resuscitation.

The book takes very little time to read, and deserves the attention of doctors, some of whom know less than laymen about resuscitation methods.

Radio-isotope Conference, 1954

Vol. I. Editor: J. E. JOHNSTON. 1954. Pp. 418. 65*s*.

Radiobiology Symposium, 1954

Editors: Z. M. BACQ and PETER ALEXANDER. 1955. Pp. 362. 60*s*.
London: Butterworth Scientific Publications.

THE fashion of the scientific 1950s of printing the proceedings of international conferences is valuable only if publication is rapid. In both these instances the publishers and the editors are to be congratulated on issuing reports within six months.

The work recorded at the radio-isotope conference held at Oxford last July was in no sense revolutionary. In the sessions on therapy, diagnosis, animal physiology and pathology, biochemistry, and plant nutrition there is nothing that will rank in history as outstanding, but there is much sound effort. As might be expected, radioactive isotopes still have their most useful rôle in physiological experiments on animals or in the glassware of the biochemist—now often vastly more complex than the test-tube. Thus the three sessions each on physiology and biochemistry are much better value than the two clinical sections; but the clinician may dip into them with advantage: for on the physiology of today, as illustrated here, next year's diagnostic tests may be founded.

At the radiobiology symposium held at Liége last August, physical chemists described the effects of radiation on model chemical agents such as lipids. An oxidising effect is usually predominant and the peroxides found in vivo in mice are sought. Desoxyribose nucleic acid (D.N.A.) is also of course a substance for study, and so less obviously to the biologist is polymethylmethacrylate. Oxidation is of interest not only to the chemist. Bacteria, bacteriophage, and mice are the subjects for experimentation with anoxia and oxygen-accepting substances. Some of these last-mentioned, like cysteamine, are being widely used in investigation, since they give measurable prophylaxis against radiation. Spleen and bone-marrow injections on the other hand are equally in the news since they are effective as therapy in reducing mortality. Reversely, radiosensitisers are of value in clinical radiotherapy. Taking the cell to bits after it has been irradiated is another method

of approach. The biochemists look at such processes as phosphorylation of mitochondria and D.N.A. synthesis: the cytologists look at disordered chromosomes.

Color Atlas of Pathology

Vol. II. Prepared under auspices of the U.S. Naval Medical School, National Medical Center, Bethesda. Philadelphia and London: J. B. Lippincott. 1954. Pp. 450. £7.

THIS admirable and well-produced book will be read with profit not only by students and postgraduates but also by pathologists in need of an interesting refresher course.

The subjects covered include the endocrine glands, the reproductive organs, the breast, and skin. The illustrations, some of which are clinical, are nearly all excellent, and they are all helpful and carefully selected. Each section is introduced by a few pages of text; then follows the photographs, three to a page, with full and lucid captions outlining the case-histories and the pathological findings.

Rear-Admiral Lamont Pugh, the surgeon-general, in his foreword pays a well-earned tribute to the team of authors, photographers, and lithographers who have contributed to the work. Inevitably, in a book of this kind, the price is too high for most of us; for this reason it is to be hoped that it will be included in medical-school libraries.

Porphyrins

Their Biological and Chemical Importance. A. VANNOTTI, University professor and director of the University Medical Polyclinic, Lausanne. Translated by C. RIMINGTON, D.SC., F.R.S., professor of chemical pathology, University of London. London: Hilger & Watts. 1954. Pp. 258. 50*s*.

THE original German edition of Professor Vannotti's monograph, *Porphyrine und Porphyrinkrankheiten*, was rightly regarded as a classic; hence the new English edition, translated and revised by Professor Rimington, and containing new material, is especially welcome. It is a pity, however, that, at a time when there have been major advances in this field, there has been so long a delay between preparation of the manuscript and publication. Thus there is but a scanty account of the incorporation of labelled glycine and acetate into porphyrins and related compounds; there is no mention at all of the brilliant work of Shemin in elucidating the source of each carbon atom in the porphyrin structure; and only a footnote refers to the identification of porphobilinogen, the colourless precursor of porphyrin, excreted in acute porphyria. At no point is it made clear that, according to modern views of porphyrin biosynthesis, protoporphyrin is formed (even though via an indirect pathway) by decarboxylation and dehydrogenation of uroporphyrin. On the contrary, some emphasis is made regarding the demonstration by van den Bergh that protoporphyrin was converted to coproporphyrin by perfusion through the liver—an observation which has not been confirmed and upon which doubt has been cast. The very recent work on δ-amino-lævulinic acid could perhaps scarcely have been included.

The chapter on physicochemical aspects of porphyrins has a number of valuable tables presenting the wavelengths and extinction coefficients of the absorption bands of the various porphyrins and—even more useful—their fluorescence spectra. The short chapter on methods of extraction and qualitative and quantitative determination of porphyrins is little more than a catalogue of the various methods proposed, and does not discuss them critically. A brief but useful account of porphyrins in Nature, in which previous work on the porphyrins of bacteria and of yeast is particularly well reviewed, is followed by two chapters dealing with the physiology and pathology of porphyrins in man. Professor Vannotti discusses, from his wide clinical experience, numerous conditions in which porphyrin excretion is increased or abnormal, and presents some interesting data on the time relations between porphyrin excretion and such pathological disturbances as hæmorrhage, anæmia, and cardiac insufficiency. One of the best sections deals with the evidence that in lead poisoning there is an inhibition of the utilisation of iron in the synthesis of hæmoglobin in the erythroblast, and consequent elimination of type-III porphyrins. A 56-page chapter on porphyria is one of the best accounts of the clinical aspects in English. It is a pity that the author does not emphasise more the great diagnostic importance attached to the finding of porphobilinogen in the urine. A final chapter, on treatment, probably gives too much weight to the relations between vitamins and the porphyrias. Treatment of this disease is still symptomatic and palliative, and spontaneous remissions have too often been attributed without foundation to some specific treatment.

In spite of the lamentable delay in publication and the consequent absence of the recent advances in this field, this book is a valuable contribution to the literature of porphyrins and porphyria and can usefully be read by clinicians likely to encounter the condition as well as by laboratory workers attempting to elucidate the function of these pigments and the mechanism of the porphyrias.

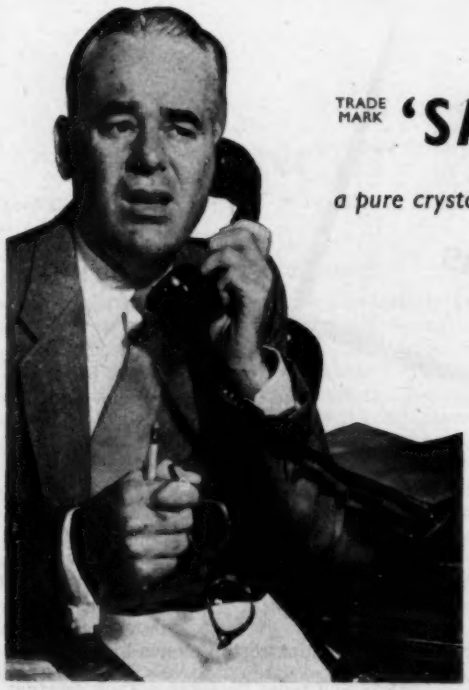
Rheumatic Fever

"*Disease-a-Month*" *Series, no. 1.* LOWELL A. RANTZ, associate professor of medicine, Stanford University School of Medicine. Chicago: Year Book Publishers. London: Interscience Publishers. 1955. Pp. 35. Twelve monthly issues, 65*s*.

THE publishers of this new series are convinced that "the busy physician . . . unable to maintain a routine schedule of comprehensive reading . . . will eagerly find time to read regularly a single and original 30 to 40 page monthly presentation of high authority." The first issue, by Dr. Rantz, of Stanford University Medical School, is an authoritative, balanced, and practical summary of modern views on the pathology, prophylaxis, and management of rheumatic fever which fully justifies the publishers' description. It is possible to feel a niggling doubt about this sort of thing. There is no real substitute for the eclectic approach, however laborious. If our sifting is done for us, can we distinguish fact from opinion and experience from prejudice? Nevertheless this series will be welcomed as useful and convenient summaries. It is, after all, intended as no more.

Psychometric Methods (2nd ed. New York and London: McGraw-Hill. 1954. Pp. 597. 61*s*.).—Prof. J. P. Guildford recognises that the problems of psychometrics are not so much problems of pure mathematics as practical problems of collecting, comparing, classifying, and inter-correlating psychological data. From a concise account of the value of measurement itself, and the mathematical concepts involved, he proceeds to discuss methods of conducting the simplest to the most advanced statistical operations required to determine the central trend, dispersion, correlation, and factor content of different kinds of psychological measurements. Quite justifiably he gives precedence to his own now largely orthodox procedures, but he describes the contributions of other workers in this field in a way which brings his subject into historical perspective and makes the book enjoyable. Copious references are given at the end of each chapter, and are clearly indexed at the end of the book. Even in 600 pages he has had to limit his discussion of this subject, which is at present almost a major psychological industry. To make room for the enormous amount of new material it has been necessary to eliminate most of the statistical treatments given in his first edition, and to refer readers to his *Fundamental Statistics in Psychology and Education*. In psychometrics we are notoriously apt to destroy the qualities of human behaviour which will not submit to measurement, or from their very originality cannot be classified and counted; but Guildford conveys a vitality behind his techniques and a generous outlook which renders his exposition free from either defensive dogmatism or aggressive objectivity.

La rate et ses maladies (Paris: Masson. 1954. Pp. 299. Fr. 2200).—This monograph is a fair summary of present-day ideas on diseases of the spleen, but contains little that is not already well known to anyone who follows the literature. The only unusual sections—on splenomegaly due to parasitic diseases and on splenomegaly due to tuberculosis—reflect Dr. Gabriel Gelin's special experience in North Africa.



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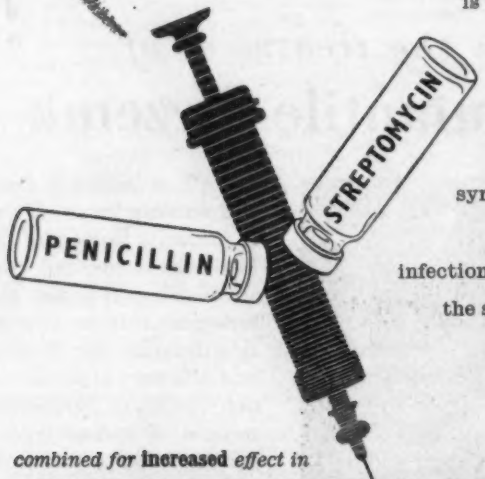

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THE LANCET
LONDON: SATURDAY, MARCH 12, 1955

The Accident Syndrome

THE notion that some people are particularly susceptible to accidents is nowadays generally accepted; and some authorities have gone so far as to say that 85% of accidents are contributed by 15% of the population. But who exactly are the accident-prone? Do they really form a convenient homogeneous group about whom it is possible to make statements and predictions? Students of the subject are inclined to agree that they do; but they agree about very little else. Nothing could be less similar than the portraits drawn by different observers of this ham-handed and elusive section of the community.

Those described by FLANDERS DUNBAR,[1] in 1942, were quick-minded impulsive people, given to immediate action, inarticulate about their feelings, apt to divorce and remarry easily, unusually healthy, seldom off work, not subject to colds or indigestion, consciously or unconsciously hostile to authority but rather careful to avoid conflict with it.

They came, typically, from families in which both parents were strict; but they had usually left home early or been orphaned, and had thus lived with their parents for a shorter time than most children. Their education had often been interrupted, usually because they had failed to finish any training course they undertook; and their work-history was of many and diverse jobs. Usually, just before the accident, there had been some conflict, with authority, parent, or spouse, from which escape had seemed impossible.

DUNBAR made these observations on a group of fracture patients in hospital, whom she was studying for comparison with patients suffering from coronary occlusion. It came to her as a surprise that 80% of the patients in this fracture ward had had two or more accidents. She found the accident habit to be specially common among those aged 15–25.

A rather different picture comes from J. W. WHITFIELD [2] who recently made a study of accident-prone miners.

He found they fell into two groups according to age. The younger men were heavy, muscular, and well coördinated, but not very quick at spotting when danger threatened. The older men were quick enough to see the danger, but not quick enough at getting out of the way. The young ones, as he put it, failed in appreciation, the older ones in performance; and neither the slow-witted young nor the slow-moving old quite fits in with the casual impulsive people described by DUNBAR.

In the Milroy lectures which he gave at the Royal College of Physicians on Feb. 8 and 10, J. A. SMILEY drew yet another picture—of workers in an aircraft factory, given not only to accidents but ailments. Compared with controls, these workers lost thrice as much time from work, and attended the medical department thrice as often, for causes other than accidents. They were also far more liable to peptic ulceration than their fellows, and more often away from work with conditions diagnosed vaguely by their doctors as fatigue, neurasthenia, gastritis, rheumatism, and the like. (Nowadays DUNBAR,[3] too, emphasises a relation between accident-proneness and minor ailments.) Some 72% of them, as against 8% of controls, were emotionally unstable, or passing through periods of emotional crisis or strain at the time of the study. Young married men aged 26–35, with children, were often sharing quarters (because of the housing shortage) either with their own or their wives' parents. Many members of the group as a whole showed palmar, plantar, and axillary sweating, and in moments of stress, they were either unable to micturate or developed frequency; some also showed mild transient albuminuria. Many of these symptoms, in SMILEY's view, suggest a loss of balance between the sympathetic and parasympathetic systems, influenced by abnormal emotional activity and mediated by the hypothalamic region of the brain. Lesions in this region (as we remarked last week [4]) have also been shown to be associated with peptic ulceration.

Why should these three observers see the accident-prone so differently? Perhaps because they attached rather different meanings to the term "accident." DUNBAR's original group had fractured themselves badly enough to get into hospital. WHITFIELD counted only those accidents which had kept his miners away from work for three days or more. SMILEY, on the other hand, included all accidents reported to the medical department; and he had good reason to believe that, during the period under review, extremely few accidents, whether major or minor, were not reported. Are there perhaps different kinds of accident-prone, prone to different kinds of accident—some impulsively shattering their bones, some moodily pinching their fingers in machinery, and some pursuing dangerous callings for which slowness of wit or limb unfits them? Does the choice of accident, in fact, depend partly on temperament? Certainly, the greater the variety of accidents taken into account the less precise the portrait of the accident-prone appears. MORRIS S. SCHULZINGER [5] has studied the case-histories of all the accident patients he encountered between 1930 (when he entered the industrial and general practice of medicine) and 1948: they amount to 35,000 cases, of which 27,000 were industrial and 8000 non-industrial. He divides those who had had more than one accident into "normally adjusted" (group A) and "irresponsible and maladjusted" (group B), and finds that though, in both groups, accidents were "essentially an affliction of youth," yet there was a higher incidence of repeated accidents in group B than in group A. Males had a higher incidence of accidents than females. He finds no reason to suppose that 85% of accidents befall 15% of the population: on the contrary, three-quarters of all these accidents were the solitary experiences of large numbers of individuals. He notes, as others have done, a definite seasonal pattern, numbers of accidents increasing from a low figure in February to a peak in June-August and

1. *Clinics*, 1942, **1**, 879; see also *Lancet*, 1952, **ii**, 1295.
2. *Brit. J. industr. Med.* 1954, **11**, 126; see also *Lancet*, 1954, **i**, 1335.
3. Emotion and Bodily Changes, p. 62. 4th ed., New York: Columbia University Press. 1954. Pp. 1192. 46.
4. *Lancet*, March 5, 1955, p. 495.
5. *Arch. industr. Hlth*, 1955, **11**, 66.

then declining, and a similar daily pattern rising from a low figure at 5 A.M. to a peak at 5 P.M. and then falling.

Six types of incident accounted for 80% of non-industrial accidents: "falls, aggressive behaviour, handling objects, foreign bodies, motor vehicles, and stumbling into objects." The superstition that one accident is likely to be the first of a series of three seems to gain prestige from the fact that "accidents often occur in chain fashion, as if one accident acted as a trigger mechanism for another accident, or series of accidents, in the individual or the group." Moreover there seem to be some who have a predilection for certain types of accident or for injury to certain parts of the body. SCHULZINGER, too, finds that the probability of accidents is increased by emotional stress or strain. Indeed, from his findings and those of others he deduces that one can predict with reasonable certainty when and to whom an accident is most likely to happen.

Let the young man of 21 beware of a hot and humid summer day in June or July, at a weekend, or while he is on holiday, especially if he is an aggressive type, or is driving a car, and more particularly if it is late afternoon or early evening. Such young men are the most likely people to have accidents, especially if they are inexperienced drivers, or have taken alcohol, or are driving too fast, or are tired, or have psychological conflicts, or are suffering from anxiety, hostility, frustration, or guilt; and few young men of 21 manage to avoid all such weaknesses. If they are irresponsible and maladjusted, and grew up in a home subject to violence and strife, under the care of over-authoritative parents or parent-substitutes, their chances of an accident are much increased. How much more hopeful (for the time being) is the outlook for a healthy well-adjusted girl of 13, born and reared in a normal, secure, and loving home in which both parents are well adjusted: she is the least likely person, he found, to have an accident.

SCHULZINGER concludes that we should discard the idea of accident-proneness and accept instead a concept of accidents as a disease syndrome, for which preventive measures are possible. The accident prone are, in his view, not a fixed group but a shifting one, with new people constantly leaving or joining. The excessive liability to accidents of the young usually disappears with age; and those who suffer repeated accidents tend to improve "with learning, with physiological and psychological adaptation, with the development of more adequate psychological defences, with the elimination of hazardous exposure. . . ." Accidents, then, should be looked on as a clinical entity, he thinks, rather than a problem in safety; and doctors should take responsibility for diagnosing and treating the physical, mental, and emotional disorders which play a part in accidents.

Nevertheless inside this wide concept there may be room for the smaller notion of accident-proneness. Surely it is useful to look, as WHITFIELD and SMILEY have done, for those in a circumscribed industrial group who have the accident habit, and to discover what preoccupations or discontents they are thus avenging on themselves, or what physical or mental peculiarities are hindering them in their calling. Some, at least, of these factors may be modifiable; and even an opportunity to unload his griefs may appreciably change a man's attitude. By relieving us of the notion that accident-proneness is a life-pattern SCHULZINGER brings this tiresome disability into the field of treatable disorders.

Pharmacology of Reserpine

IT is not yet clear what place reserpine, the active alkaloid of *Rauwolfia serpentina*, will take in the treatment of hypertension. Many reports [1–8] have claimed that reserpine represents an important advance, whereas others [9–13] have been more cautious.

In laboratory animals and in man reserpine lowers the blood-pressure, slows the heart-rate, increases the intestinal movements, constricts the pupil, and exerts a characteristic sedative action on the central nervous system. Even after intravenous administration of the drug, there is an interval of an hour or more before the onset of these effects, which are long-lasting. The classical techniques of the experimental pharmacologist show that in therapeutic amounts reserpine lacks significant peripheral action. Thus it does not inhibit the effects of adrenaline,[14–21] noradrenaline,[14 18 22] acetylcholine,[14 21–23] or histamine [18 21 22]; it does not block transmission in autonomic ganglia [14 19]; and it does not increase the movements of the isolated intestine.[14 17] Nor does reserpine influence the rate, stroke-volume, or coronary flow of the isolated heart [10 18 20] or relax perfused blood-vessels.[14 18 22 24] Finally, instilling reserpine directly into the conjunctival sac does not affect the pupil.[25] But many of these effects, which are absent after administration of amounts equivalent to therapeutic doses, are found after administration of large doses. The effects of reserpine observed clinically are, it seems, due to actions within the central nervous system. The fall of blood-pressure in animals is due to lowering of the peripheral resistance by vasodilatation; cardiac output does not fall significantly.[20] The central site of this hypotensive action is confirmed by the observation that reserpine abolishes pressor reflexes, the pathways of which traverse the central nervous system. These reflexes include the pressor responses to stimulation of the sciatic nerve,[14] compression of the carotid sinus,[14 20 21] or stimulation of the central end of the cut vagus.[14 20 21 26] On the other hand, reserpine does not influence the pressure rise induced by stimulation of the efferent vagus [14 20 21]—a response that does not

1. Vakil, R. J. *Brit. Heart J.* 1949, **11**, 350.
2. Wilkins, R. W., Judson, W. E. *New Engl. J. Med.* 1953, **248**, 48.
3. Löffler, W., Esselier, A. F., Prött, F., Wegmann, A. *Schweiz. med. Wschr.* 1953, **83**, 1012.
4. Vakil, R. J. *Lancet*, 1954, ii, 726.
5. Wilkins, R. W. *Ann. N.Y. Acad. Sci.* 1954, **59**, 36.
6. Galamboš, A. *Angiology*, 1954, **5**, 449.
7. Wilkins, R. W. *Practitioner*, 1954, **173**, 84.
8. Livesay, W. R., Moyer, J. H., Miller, S. I. *J. Amer. med. Ass.* 1954, **155**, 1027.
9. Freis, E. D., Ari, R. *Ann. N.Y. Acad. Sci.* 1954, **59**, 45.
10. Moyer, J. H. *Ibid*, p. 82.
11. Douthwaite, A. H. *Lancet*, 1954, i, 1345.
12. Doyle, A. E., Smirk, F. H. *Practitioner*, 1955, **174**, 135.
13. See *Lancet*, 1954, ii, 741.
14. Bein, H. J. *Experientia*, 1953, **9**, 107.
15. Trapold, J. H., Osborne, M., Yonkman, F. F. *Fed. Proc.* 1953, **12**, 373.
16. Bein, H. J., Gross, F., Tripod, J., Meier, R. *Schweiz. med. Wschr.* 1953, **83**, 336.
17. Plummer, A. J., Earl, A., Schneider, J. A., Trapold, J., Barrett, W. *Ann. N.Y. Acad. Sci.* 1954, **59**, 8.
18. Tripod, J., Meier, R. *Arch. int. Pharmacodyn.* 1954, **97**, 251.
19. Winsor, T. *Ann. N.Y. Acad. Sci.* 1954, **59**, 61.
20. Trapold, J. H., Plummer, A. J., Yonkman, F. F. *J. Pharmacol.* 1954, **110**, 205.
21. Gourzis, J. T., Sonnenschein, R. R., Barden, R. *Proc. Soc. Exp. Biol., N.Y.* 1954, **85**, 463.
22. Tripod, J., Meier, R. *Arch. int. Pharmacodyn.* 1954, **99**, 104.
23. Barrett, W. E., Rutledge, R. A., Rogie, B. *Fed. Proc.* 1954, **13**, 334.
24. Mueller, J. M., Schlittler, E., Bein, H. J. *Experientia*, 1952, **8**, 338.
25. Ray, G. K., Roy, P. K., Dasgupta, S. R., Werner, G. *Arch. exp. Path. Pharmak.* 1953, **219**, 310.
26. Tripod, J., Bein, H. J., Meier, R. *Arch. int. Pharmacodyn.* 1954, **96**, 406.

depend on the integrity of the central nervous system—and it does not affect the secretion of pressor amines by the adrenal cortex.[14] There is no evidence that reserpine affects humoral pressor agents.

The miotic action of reserpine [14–17 19 20 25 27] provides a profitable field of study. This effect is not very great in man,[3 9] but in the dog and other animals it is the sign which, after administration of the drug, appears first and persists longest. After intravenous injection of reserpine the pupil of the dog begins to narrow in half an hour; in two hours it is half the initial size, and it returns to normal only after more than six hours; the light reflex of the pupil is not diminished.[14 25] If the eye is denervated by excision of the ciliary ganglion reserpine has no miotic effect; which confirms that the drug does not act at the periphery.[25] The miosis might, then, be due to central stimulation of the parasympathetic system or to central inhibition of the sympathetic system. The nictitating membrane of the dog and cat has no parasympathetic innervation, and contraction and relaxation of this membrane are due to sympathetic stimulation and inhibition respectively. Reserpine causes relaxation of the nictitating membrane,[14 16 25 27] and this has been taken to support the view that reserpine acts by central inhibition of sympathetic tone. Several of the other effects of reserpine might be explained similarly—for example, the increased intestinal motility, the slowing of the heart, and perhaps even the fall in blood-pressure. HESS [28] found that stimulation of certain areas of the mesencephalon resulted in hypotension, bradycardia, diarrhœa, and miosis. The similarity of this syndrome to the effects of reserpine was pointed out by BEIN et al.,[16] who wondered whether reserpine might act through these particular areas. Clinical observation gives some support to this suggestion. In a few hypertensive patients treatment with reserpine has aggravated existing bronchial asthma, renal colic, biliary colic, or ulcerative colitis [4 12]; and such effects might be due to relative parasympathetic dominance. In man it is not clear what part sympathetic tone plays in maintaining the blood-pressure. The hypertensive response to cold and to posture, both thought to be mediated through the sympathetic system, are little influenced by reserpine.[17 19 29] Moreover, miosis is not often found in man, and it is apparently unrelated to fall in blood-pressure.

Another unexplained property of reserpine is the interval before the onset of its action, even after intravenous administration. It is very insoluble, and probably the delay represents simply the time required for an adequate concentration to reach the receptors [16 20]; the smaller the dose, the longer is the latent period.[14] The characteristic latency is evident in the organ bath,[18] where the action of reserpine persists and is even enhanced after the fluid containing the drug has been washed out.[30] These findings reinforce the view that the drug has an intracellular site of action.[20] A less likely explanation of the drug's latency is that it represents the time required for a metabolic transformation.[20 31]

27. Plummer, A. J., Barrett, W. E., Wagle, G., Yonkman, F. F. *Fed. Proc.* 1953, **12**, 357.
28. Hess, W. R. *Helv. physiol. acta*, 1947, suppl. 4.
29. Doyle, A. E., Smirk, F. H. *Lancet*, 1954, **i**, 1096.
30. Banerjee, J. N., Lewis, J. J. *J. Pharm., Lond.* 1955, **7**, 50.
31. Hafkenschiel, J. H., Sellers, A. M. *Ann. N.Y. Acad. Sci.* 1954, **59**, 54.

The central sedative action of reserpine is not the cause of its effect in lowering blood-pressure. But this central action is a useful adjunct; in fact, reserpine is now being increasingly used in the treatment of mental disease.[32 33] On the other hand, it can cause mental complications, notably depression, in hypertensive patients.[12 34] Otherwise there have been no reports of serious toxic actions from protracted administration. Whatever its ultimate place in the treatment of hypertension, reserpine will stimulate much inquiry into the mechanisms of this disorder.

Hazards in Treating Diabetic Ketosis

IN the main centres the treatment of diabetic ketosis has improved greatly in the past ten to fifteen years, owing largely to a round-the-clock biochemistry service by which the patient's progress can be accurately followed. It is in other hospitals, where constant biochemical control is not attainable, that most of the preventable deaths now take place. But avoidance of some of the hazards depends wholly on the clinician's skill. Commonly the patient's stomach is distended with fluid; and if this distension is not soon relieved stomach contents may be aspirated, perhaps just as consciousness is returning. Similarly it is unwise to rely on oral administration of fluid until the phase of ileus has clearly passed. Then again, diabetic ketosis is commonly associated with severe infection, such as pneumonia or carbuncle; and unless this is promptly treated the patient will remain refractory to the action of insulin.

If ketosis has come on gradually there is especial likelihood of severe depletion of fluid with circulatory collapse and renal failure. This should be treated as early as possible by intravenous administration of a fluid designed to replace the extracellular-fluid loss, such as the saline-lactate solution recommended by NABARRO and his colleagues.[35] BUTLER and others [36] have shown that "physiological" saline solution is in this context distinctly unphysiological. The deficit of sodium exceeds that of chloride, and if these are given in equivalent proportions the acidosis tends to increase by virtue of the excess chloride ions. It is therefore desirable to give these ions more nearly in the proportions in which they are found in extra-cellular fluid—namely 1·3 Na : 1 Cl, the anion deficiency being made up with lactate which is metabolised. Another possible effect of infusing "physiological saline" to counter the dehydration is hypernatræmia.[37] The real need for sodium to correct the acidosis is less than the apparent need; for the acidosis is caused mainly by accumulation of keto acids, which are metabolised more rapidly than they are formed under the influence of insulin, with release of sodium to balance its normal anions in the blood. If the patient's blood-pressure fails to rise satisfactorily as a result of infusing saline-lactate solution, other measures should be adopted; otherwise the patient may die in shock with renal failure. Administration of

32. Kline, N. S. *Ibid*, p. 107.
33. Noce, R. H., Williams, D. B., Rapaport, W. *J. Amer. med. Ass.* 1954, **156**, 821.
34. Freis, E. D. *New. Engl. J. Med.* 1954, **251**, 1006.
35. Nabarro, J. D. N., Spencer, A. G., Stowers, J. M. *Lancet*, 1952, **i**, 983.
36. Butler, A. M., Talbot, N. B., Burnett, C. H., Stanbury, J. B., MacLachlan, E. A. *Trans. Ass. Amer. Physns*, 1947, **60**, 102.
37. Nichols, G. jun., Nichols, N. *J. clin. Invest.* 1953, **32**, 113.

hypertonic plasma has the advantages of not involving the delay of cross-matching blood, and of returning to the vascular system fluid which may have escaped into the interstitial spaces. If hypotension persists, intravenous noradrenaline is a rational remedy.

The cornerstone of the successful treatment of diabetic ketosis is prompt administration of sufficient insulin. But in the past decade this has perhaps been emphasised rather unwarily, with the result that insufficient regard has been paid to the risk of the patient slipping quietly from diabetic coma into hypoglycæmic coma; and this hazard is especially great where serial blood-sugar estimations are not done. MICKS [38] states that he has never heard of fatal hypoglycæmia after overdosage of insulin in diabetic ketosis, but such accidents undoubtedly happen, as is shown by the following case which has been brought to our notice:

> The patient received insulin 150 units initially, 100 units an hour later, and then 50 units hourly. The insulin requirement was assessed by the clinical condition and by urine tests. Lack of clinical improvement suggested that she was peculiarly refractory to insulin; but ten hours after treatment was started the urine became sugar-free, and the patient died shortly afterwards without recovering consciousness. Blood-sugar levels were not estimated concurrently, but specimens were taken every two hours for estimation next day. It was then found that the level had fallen from an initial 801 mg. per 100 ml. to 237 mg. per 100 ml. in the first four hours, and had reached 65 mg. per 100 ml. before death.

Several lessons may be learnt from this case: first, the unreliability of purely clinical judgment of insulin dosage; secondly, the desirability of parallel measurement of the blood-sugar, which can indicate a safe dosage of insulin; and thirdly, the need for some simple laboratory estimate of the severity of the condition, if the blood-sugar level cannot be estimated at once. This need is largely met by a simple, roughly quantitative, test for plasma-ketones with a modified Rothera's powder.[39] In diabetic coma insulin resistance is very closely associated with the degree of ketosis[40]; so, when the plasma-ketones are found to be disappearing, this is an indication to reduce the insulin dosage and to watch carefully for hypoglycæmia. At this stage, too, the intravenous infusion should contain glucose.

After the initial phase of intravenous therapy, designed mainly to replace lost extracellular fluid without contributing to the glycosuria which washes out valuable electrolytes in the urine, the next step is to make good the loss of intracellular fluid. By this time the blood-sugar level should have reached a fairly normal level; so the infused solution should contain glucose for the insulin to act on, as well as cellular components such as potassium, magnesium, and phosphate. Omission to replace magnesium and phosphate is not reflected in any obvious clinical effects; but hypokalæmia is a real danger where the patient has become severely depleted, because the already diluted plasma-potassium tends to move into the cells under the influence of insulin. Previously unexplained deaths during apparent recovery from diabetic ketosis have undoubtedly been due mainly to the cardiac effects of plasma-potassium levels of under 2 m.eq. per litre.[41,42] Potassium is best infused in a dilute solution (about 30 m.eq. per litre); and the infusion should be slow, in order not to risk hyperkalæmia which can be equally dangerous. It is unsafe to give potassium intravenously early in the treatment of diabetic ketosis, when its plasma-level tends to be raised already, or at any stage when the urine flow is inadequate.

Severe diabetic ketosis is becoming less common as the care of diabetics improves, but it is still a not unusual medical emergency. Even small hospitals should carry a stock of saline-lactate [43] and glucose-electrolyte [44] solutions, and a supply of modified Rothera's powder for estimating plasma-ketones when the blood-sugar cannot be estimated at once.

38. Micks, R. H. *Brit. med. J.* 1948, ii, 200.
39. Dumm, R. M., Shipley, R. A. *J. Lab. clin. Med.* 1946, **31**, 1162.
40. Guest, J. M., Mackler, B., Knowles, H. C. jun. *Diabetes*, 1952, **1**, 276.

Annotations

AFTERMATH OF GASTRIC OPERATIONS

AN alarming picture is given by Schindler and Dagradi [45] of the state of the gastric mucosa after operations which create an abnormal outlet from the stomach. Gastroscopy was done on 368 patients after gastrectomy, gastro-enterostomy, or vagal section. Marginal ulcers were seen in 28 of the 186 patients with a gastro-enterostomy and 15 of the 148 who had undergone partial gastrectomy; in 3 patients the ulcers gave rise to no symptoms and had not previously been suspected. The true incidence may be higher; Meadows and Lefeber,[46] with experience of over 1000 gastroscopies, were unable to see 9 anastomotic ulcers demonstrated radiographically. Schindler and Dagradi also found gastritis in 84%; and in half of these patients the inflammation was severe. The controls were a small group submitted either to vagal section alone or to vagal section combined with pyloroplasty; in only 1 out of 20 of these was gastritis seen, though it was present in 9 of 14 others in whom gastro-enterostomy had been associated with vagotomy. The series included only 2 cases treated by the Billroth-I operation, but in both inflammation was severe. It seems therefore that gastro-duodenal anastomosis provides no protection; whereas pyloroplasty does not damage the pyloric musculature so extensively as to destroy the mechanism which prevents the unregulated reflux of what Schindler and Dagradi regard as "noxious intestinal juice."

To those who see their patients regularly after operation, rather than the mucosa, these findings may be surprising. Probably the picture is not so black as it is painted, nor the mucosa so red; for the cases seen by Schindler and Dagradi were a selected group comprising "quite a few" seen routinely for follow-up and research purposes and a majority referred because of symptoms.

THE FATE OF ASPIRIN

MANY a medical controversy has been settled as the result of an advance in a different field of inquiry. For example, the identification of Castle's hæmopoietic principle with vitamin B_{12} was due to the application of new analytical techniques borrowed from chemistry. By labelling with the isotope C^{14}, chromatographic separa-

41. Martin, H. E., Westover, L., Simonsen, D. G., Mehl, J. W. *Calif. Med.* 1950, **72**, 133.
42. Stephens, F. I. *Ann. intern. Med.* 1949, **30**, 1272.
43. Saline-lactate solution: sodium chloride 5·85 g., sodium lactate 3·36 g., distilled water to 1 litre (sodium 130 m.eq. per litre, chloride 100 m.eq., lactate 30 m.eq.).
44. Glucose-electrolyte solution: sodium chloride 1·17 g., dipotassium hydrogen phosphate 0·87 g., potassium chloride 1·49 g., magnesium chloride 0·24 g., glucose 50 g., water to 1 litre (sodium 20 m.eq. per litre, potassium 30 m.eq., chloride 45 m.eq., phosphate 10 m.eq., magnesium 5 m.eq., glucose 5%).
45. Schindler, R., Dagradi, A. E. *Surg. Gynec. Obstet.* 1955, **100**, 78.
46. Meadows, J. C., Lefeber, E. J. *Ann. intern. Med.* 1955, **42**, 69

tion, and measurement of ultraviolet fluorescence and optical density, Mandel et al.[1] have now answered the question: what happens to aspirin in the body? This question is important because the analgesic properties of aspirin are thought to reside in the whole substance and to be lost on hydrolysis. Mandel et al. have shown that after ingestion of aspirin both aspirin itself and salicylic acid appear in the plasma. The highest concentration of aspirin is reached after thirty minutes; thereafter the level falls, and after two hours only negligible amounts remain. The proportion of total salicylate present as aspirin in the plasma declines steadily, and extrapolation of the curve obtained by plotting this ratio against time after absorption shows that at "zero time" aspirin constitutes virtually 100% of the total salicylates. Mandel et al. conclude that aspirin may be absorbed from the intestinal tract unchanged, and that much, if not all, of the salicylate present in the plasma two hours after administration may have been formed by hydrolysis of acetylsalicylic acid.

These findings accord with the familiar clinical observation that the analgesic activity of aspirin reaches a maximum within half an hour after ingestion, and that the action wears off within two hours.

TRIGGER-FINGER

STENOSING tenosynovitis is a constriction of the tendon-sheath, usually associated with changes in the tendon itself, producing snapping on extension or flexion of a digit, or, particularly in children, gross limitation of extension. Fahey and Bollinger[2] have investigated this condition. In the child the flexor pollicis longus is the only tendon commonly affected, and the disorder is occasionally noticed at birth. The thumb is usually locked in flexion and cannot be passively extended—a sign which distinguishes this disorder from the adducted thumb of the spastic child, and which often results in a mistaken diagnosis of congenital contracture or dislocation. In the child snapping is absent, but the diagnosis may be confirmed by the presence of a firm nodule in front of the metacarpo-phalangeal joint. In adults, too, the thumb is commonly affected. Snapping is usually the only symptom, although occasionally active flexion may be completely lost. A firm nodule is always palpable at the base of the thumb; this nodule does not move during flexion of the digit. Of the other fingers the third and fourth are the most commonly affected. Occasionally both hands are involved, and Watson-Jones[3] reported the case of a child with eight fingers affected. Trigger-finger has been found in association with the more common de Quervain's syndrome.[4]

Pathological changes are most prominent within the fibrous tendon-sheath, which shows fibrous-tissue proliferation and degeneration; the degenerative changes include fraying of fibres, and the formation of pseudocysts or of cartilage. Changes in the tendon itself are more prominent in children than in adults, usually producing a nodular or bulbous enlargement with constriction of the tendon either proximal or distal to this swelling. The cause of this disorder is obscure. There is little evidence of a familial association, but in the child the condition is clearly sometimes congenital. In the adult the onset may be related to trauma or possibly to unaccustomed occupations. Men are relatively immune; which is difficult to explain, since in infants the sexes are more or less equally affected.

Treatment of stenosing tenosynovitis is simple and effective. The tumour is exposed under local or general anæsthesia, and a longitudinal incision made along the tendon-sheath. Such an incision frees the tendon, and if made laterally will not result in bow-stringing. There is little evidence that conservative treatment is of any value, or that more widespread excision of the sheath is necessary. Few operations have more satisfactory results.

1. Mandel, H. G., Cambosos, N. M., Smith, P. K. *J. Pharmacol.* 1954, **112**, 495.
2. Fahey, J. J., Bollinger, J. A. *J. Bone Jt Surg.* 1954, **36A**, 1200.
3. Watson-Jones, R. Fractures and Joint Injuries. Edinburgh, 1943.
4. Aitken, A. P. *New Engl. J. Med.* 1945, **232**, 105.

PSYCHOTIC CHILDREN

PLACES in mental-deficiency institutions are scarce; which means that by the time a child is admitted to one, a good many attempts will have been made to alleviate his mentally retarded condition: indeed, he may not be admitted until he has proved beyond ordinary family and social care. By that time it is easy to overlook the early history and to think of all such children as congenital failures. O'Gorman[1] has recently discussed whether some of these cases may be the result of an early psychosis—whether they represent, in fact, dementia rather than amentia. At first sight this seems to be a point of merely academic interest: and, indeed, as far as difficulty of diagnosis, understanding of psychopathology, and hopes of cure go, there may not be much to choose between two such dire end-results. On the other hand modern psychiatry is developing more optimistic therapy for adults suffering from mental illness, and fewer are relegated *at an early stage* to mere custodial care. If psychosis is commoner in childhood than has generally been thought, early diagnosis should offer hopes of cure for some at least. Rogers,[2] in fact, has recently described how a remission (to put it no higher) was achieved in one psychotic child of 7, mainly by ensuring for him enough individual attention to keep him in touch with his surroundings and prevent him from losing himself in solitary fantasy.

The idea that psychosis in childhood is not rare has been put forward by Mildred Creak[3] and other child psychiatrists here, in the United States, and in Europe; and the time is ripe for more concentrated research on such cases. Nomenclature is so far puzzling, reflecting the difficulty observers find in arriving at a diagnosis when the disrupting factor operates early in life, while development is still in progress. As long ago as 1906, de Sanctis[4] used the term "dementia præcocissima," and Heller[5] (in 1908) the term "dementia infantilis," implying an active deterioration; but these terms coincided with the then current diagnosis of "dementia præcox." Bleuler, besides providing a new name, threw new light on the condition he called schizophrenia; and many writers since have described the disordered function and break-up of personality associated with this disease—itself almost certainly not a single or unified clinical entity. The fact that the pathology of schizophrenia is still a major problem for research-psychiatrists should direct their attention to psychotic children, for these may well be the clinical group presenting schizophrenia in pure culture, as it were. O'Gorman's figures suggest that a sizeable proportion of cases in mental-deficiency institutions may, on closer scrutiny, prove to belong to this group.

Indeed, it is perhaps time to study afresh the whole question of mental deficiency. Are we justified in thinking of even congenital conditions as *necessarily* beyond remedy? Certainly few mentally defective patients are so clearly open to treatment as the cretin; but Woolf et al.[6] have recently suggested that it may become possible to remedy the mental deficiency of children who excrete phenylpyruvic acid. Our notions of mental disorder are hindered rather than helped by our preoccupation with symptoms—that meagre array of distress signals which the fogged and clouded intellect

1. O'Gorman, G. *J. ment. Sci.* 1954, **100**, 934.
2. Rogers, J. B. See *Lancet*, Jan. 1, 1955, p. 28.
3. *J. ment. Sci.* 1951, **97**, 545.
4. de Sanctis, S. *Riv. sper. Freniat.* 1906, **32**, 141.
5. Heller, T. *Z. jugendl. Schwachsinns*, 1908, **2**, 17.
6. Woolf, L. I., Griffiths, R., Moncrieff, A. *Brit. med. J.* Jan. 8, 1955, p. 57.

hangs out to catch our attention. Yet the very term "breakdown" invites us to look deeper—implying, as it does, a special vulnerability, a genetic factor, which has encountered a second factor, a set of adverse circumstances in the environment. In our mental-deficiency institutions there may be others besides psychotic children who began life with average mental capacity, and for whom the normal pattern of development was disrupted by something which happened postnatally. The concept suggests opportunities for preventive psychiatry which pædiatricians and psychiatrists might explore—if possible together.

IRON AS A LIVER POISON

DEATHS from overdosage of iron preparations prescribed for therapeutic purposes are distressingly numerous. Some of the attractive proprietary preparations are readily mistaken for sweetmeats; and this, together with apparently special susceptibility in the young, no doubt accounts for the relatively high incidence of iron poisoning in infants and young children. The three fatal cases observed by Luongo and Bjornson [1] over a period of two years in a population of a million may be a rough guide to the frequency of such poisoning.

The principal clinical manifestations are vomiting followed by profound shock, coma, and death despite prompt restorative measures. The depth and speed of development of shock suggests the rapid entrance into the circulation of a potent vasodilator,[2] and it is not unreasonable to relate this to the known action of ferritin, an iron protein complex extractable from the liver which is thought normally to play an important part in the control of iron absorption from the alimentary canal. In the presence of a massive dose of ferrous sulphate this controlling mechanism is supposed to break down—a supposition borne out by the presence of histochemically demonstrable iron in the endothelial cells of the submucosal veins of the stomach. This gross excess of iron is then available to combine with the protein, apo-ferritin, which is normally present in the liver, resulting in the formation of an excess of ferritin.

Necropsy usually shows œdema and ulceration of the stomach associated with characteristic brown staining of the mucous membrane. Apart from some pulmonary œdema and congestion of other viscera, the only organ consistently affected is the liver; but the changes have been variously described as cloudy swelling, fatty infiltration, and zonal necrosis, sometimes central and sometimes periportal. The three cases reported by Luongo and Bjornson are notable for the striking periportal necrosis, which was recognisable even in the third child who survived only for about four hours. The relation of necrosis to the ingestion of iron was definitely established by the production of virtually identical lesions in laboratory animals. In rabbits given ferrous sulphate in solution by stomach-tube, doses of less than 0·75 g. per kg. body-weight were apparently non-toxic; but doses of 0·75–1 g. per kg. regularly resulted in hepatic lesions in the periportal zones. Of 25 rabbits which received 1 g. per kg., 6 died in a few hours; the remainder survived and were killed at intervals subsequently. At twenty-four to forty-eight hours these rabbits had severe hæmorrhagic periportal necrosis. Little evidence of necrosis remained at five to six days, but slight periportal fibrosis had developed which gradually increased; and after two weeks the lobular architecture was distorted by a fine diffuse fibrosis.

Thus both clinical and experimental observations leave no doubt that ferrous sulphate in large doses produces serious liver injury. The maximal severity of the lesions in the periportal as opposed to the centrilobular zones suggests that the hepatic cellular damage is due to the direct toxic effect of the metal and not to impaired intrahepatic circulation, such as is unquestionably found in severe shock; but the shock usually associated with ferrous-sulphate poisoning may enhance the direct toxicity, as with many other liver poisons including chloroform and carbon tetrachloride.

Two forms of hepatic cirrhosis associated with heavy deposits of iron in the liver are now recognised; hæmochromatosis in this country, and the nutritional cirrhosis described by the Gillmans [3] in South Africa. The pathogenesis of both these types is still far from clear. It is essential to investigate the various factors, nutritional and environmental, which might modify the susceptibility of the liver-cells to the toxic action of iron, in order to clarify the rôle, if any, of the iron deposits in the genesis of cirrhosis in these siderotic livers.

RICE

RICE, wheat, and maize (corn) are the three main cereals of the world. Of these, rice is quantitatively the most important, for it is the staple food of over half the people of the world. In the densely inhabited rice-growing countries of Asia, rice provides 70% or more of the total calories in the daily diet of most of the population. For the poor peasants and the rapidly increasing industrial workers, both the quantity and the quality of their rice are all-important. In 1948 F.A.O. published a small monograph setting out the nutritive value of different forms of rice in relation to other foods usually consumed in these countries and to the over-all dietary needs of the people. This monograph at once became popular and was twice reprinted. A new edition [4] incorporates the results of recent investigations.

Rice may lose much of its original nutritive value during milling, washing, and cooking. In this it resembles wheat and other cereals, but the extent of the losses and their effect on the over-all value of the diet are usually much greater than in wheat-eating countries. In the rural districts most of the rice is still milled by the women of the household. This is a wearisome task, but home-pounded rice nearly always retains most of the nutrients in the original grain. Rice mills are now spreading into most of the small towns and larger villages. Since the war little mills have become popular in some countries, notably Thailand; they are driven by small petrol engines, and the capital required for their purchase is not beyond the means of the headman of even a very small village. Almost all the rice consumed in towns has been through the mills. Most samples of milled rice are not satisfactory foods, especially when the rice provides a large proportion of the total calories in the diets. But several important advances have been made which may have great repercussions on the milling processes.

Hinton,[5] in England, has studied the distribution of vitamins in the various parts of the rice grain, which can be separated by microdissection. He found that the scutellum, which is a small structure between the embryo and the endosperm, contains about 50% of the total aneurine in a rice grain, although it accounts for only 1·5% of the total weight. The scutellum is also rich in nicotinic acid and riboflavine. Clearly a milling technique that retained the scutellum attached to the grain would provide a rice of much superior nutritive properties. So far the problem of devising a milling process that will remove enough of the pericarp to provide an acceptable rice and yet retain the scutellum does not seem to have been solved.

The fortification of refined wheat flours with vitamins and minerals has been practised for many years in the U.S.A. and elsewhere. Similarly rice can be fortified by preparing a rice premix and adding this to ordinary white

1. Luongo, M. A., Bjornson, S. S. *New Engl. J. Med.* 1954, **251**, 995.
2. Smith, J. P. *J. Path. Bact.* 1952, **64**, 467.
3. Gillman, J., Gillman, T. *Arch. Path. (Lab. Med.)*, 1945, **40**, 239.
4. Rice and Rice Diet. A Nutritional Survey. F.A.O. Nutritional Study no. 1. Rome, 1954. Obtainable from H.M. Stationery Office. Pp. 93. 3s. 9d.
5. Hinton, J. J. C. *Brit. J. Nutrit.* 1948, **2**, 237.

rice. The premix consists of milled rice impregnated with a solution of the required vitamins and minerals; the grains are then provided with a coat insoluble in cold water. This premix is mixed with ordinary milled rice, usually in the proportion of 1 to 200, by means of a feeder at the mill. Extensive experiments with enriched rice, carried out in the Philippines in 1948–50,[6] showed that in a rice-eating country vitamin enrichment could bring about a striking reduction in the incidence of beriberi. An international team which visited the Philippines appreciated that enrichment of rice had led to substantial improvements in nutrition.[7] They were also impressed by the many difficulties that might prevent the effective application of an enrichment policy in other Asiatic countries.

Parboiled rice, obtained by pounding or milling paddy which has been steeped in water, steamed, and subsequently dried, has long been known to be unassociated with beriberi. Parboiled rice can be milled to a high degree without serious loss of thiamine or other water-soluble vitamins. Parboiling, as practised in the home and in many rice mills, is an unstandardised process; and the flavour of most parboiled rices is unacceptable to those unaccustomed to it. But plants for parboiling rice under standard conditions which yield a good-quality product that is more generally acceptable have been developed in the past twenty years. Such processes, known as "conversion" or "malekising" of rice, are protected by patents. But there is no indication of any general movement towards the adoption of parboiling in countries where this is not already habitual.

Meanwhile beriberi remains a common disease. If in many countries, such as Japan and the Philippines, the incidence appears to have fallen, in others, such as Thailand, there is evidence of some increase. We have the knowledge to eradicate completely this disease, yet we have not been able to do so. The problem is no longer chemical or medical. Engineering, sociology, and economics are the disciplines through which the solution must come. Beriberi is, of course, not the only deficiency disease prevalent among poor rice-eaters. Keratomalacia, stomatitis, glossitis, cheilosis, and "burning feet" are commoner than among wheat-eating populations. Nor are the rice mills the sole or even the most important of the nutritional problems of the East. Typical rice diets contain too much rice in proportion to other foods. This imbalance can be corrected only when the yields of rice per acre have been increased and land has thereby been liberated for alternative crops and animal husbandry. There is reason to believe that in many areas more land could soon be made available for other cereals, pulses, fruits, and vegetables; but it seems unlikely that in any rice-eating country the supply of milk, meat, and eggs could be substantially increased in the immediate future. Here the technical problems are agricultural; but agriculture must be related to the physiological needs of the people. These can be accurately assessed only by clinical and biochemical studies. The national nutritional committees that have been formed in so many countries in the East are mainly concerned in coördinating research work in fields involving different academic disciplines, and in husbanding limited resources both of finance and of man-power for the study of problems which seem to offer the greatest chances of practical solutions. In tropical countries there are so many urgent broad problems requiring an understanding of more than one academic discipline that very few can afford to allow many of their experienced research-workers the luxury of a secluded academic life. The F.A.O. monograph on Rice and Rice Diets sets out clearly many of these broad problems in a practical and concise way.

6. Salceds, J., Concepcion, I., Guerrero, A. F., Pascual, E. F., Valenzuela, R. C. *J. Nutrit.* 1950, **42**, 501.
7. Rice Enrichment in the Philippines. F.A.O. Nutritional Study, no. 12. Rome, 1954.

PROPHYLAXIS IN STREPTOCOCCAL EPIDEMICS

MOST, if not all, strains of group-A hæmolytic streptococci are sensitive to penicillin. Apart from its usefulness in the treatment of streptococcal pharyngitis,[1] penicillin has special value in modifying the epidemiology of streptococcal infections; it is, for example, already widely used to protect susceptible people against the repeated attacks of streptococcal upper-respiratory disease which are related to recurrences of rheumatic fever.[2] Another aspect of prophylaxis—the prevention of rheumatic fever in large military populations of young adults—has been given much more attention in the U.S.A. than in this country.

Workers at the Warren Air Force base have shown by their extensive observations[3 4] that the incidence of first attacks of rheumatic fever in adults may be reduced by more than 90% when the initial group-A streptococcal sore throats are properly treated with penicillin. In such communities another approach is to administer penicillin prophylactically to every person at epidemic times, with the aim of preventing both streptococcal infections and their rheumatic sequelæ. Seal et al.[5] have investigated the epidemiological effect of such action in three regiments of Naval recruits. The numbers at risk were large—each regiment was over 2000 strong—and 98% of the men received oral prophylactic penicillin for two weeks beginning when weekly hospital-admission rates for proved group-A streptococcal infections were slightly over 20 per 1000. Two doses of penicillin were used—either 50,000 or 500,000 units a day—and the differences between the epidemiological effects were pronounced. 50,000 units a day greatly reduced the admission-rate for streptococcal infections; but admissions rapidly reverted to the previous high levels after prophylaxis was discontinued—probably because (as was shown) this dosage did not materially affect the carrier-rate for the organism or alter the distribution of prevalent serological types. But this dosage did significantly reduce the subsequent admission-rate for rheumatic fever. 500,000 units daily had a more pronounced effect. The admission-rate during prophylaxis dropped nearly to zero, and the number of carriers fell sharply. The prevalence of specific serological types was altered both in carriers and in cases of streptococcal infection after the prophylactic course; and after a period there were no further cases of rheumatic fever. Six weeks after the end of the prophylactic course there was a second outbreak of streptococcal infection, this time due to different serological types. Seal et al. give cogent reasons for their belief that this epidemic was a true reinfection of the population from outside sources; and the outbreak was readily controlled by a further prophylactic course of 500,000 units daily.

The lessons from this valuable study seem to be these. Intermittent prophylaxis with oral penicillin at times of epidemic streptococcal infections is, in military communities, both effective and practicable. The epidemiological result of such prophylaxis is related to the dosage of penicillin used; 500,000 units daily significantly reduces the streptococcal morbidity-rate, and the distribution and prevalence of this organism in the population. Most carriers are freed of their streptococci by this régime, though it cannot, of course, influence subsequent reinfection with new strains. But perhaps the most important effect is the reduction in the incidence of rheumatic fever.

1. See *Lancet*, 1953, i, 285.
2. Stollerman, G. H. *Amer. J. Med.* 1954, **17**, 757. See also *Lancet*, March 5, 1955, p. 496.
3. Denny, F. W., Wannamaker, L., Brink, W. R., Rammelkamp, C. H., Custer, E. A. *J. Amer. med. Ass.* 1950, **143**, 151.
4. Wannamaker, L. W., Rammelkamp, C. H., Denny, F. W., Brink, W. P., Houser, H. S., Hahn, E. O., Dingle, J. H. *Amer. J. Med.* 1951, **10**, 573.
5. Seal, J. R., Mogabgab, W. J., Friou, G. J., Banta, J. E. *J. Lab. clin. Med.* 1954, **44**, 831.

Social and Biological Factors in Infant Mortality *

V. MORTALITY IN RELATION TO THE FATHER'S OCCUPATION

1911-1950

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THIS paper is a historical study of the mortality of children of men in different occupations. Reports of the General Register Office relating to the censuses of 1911, 1921, and 1931 are used, together with data for 1939 collected for the projected census of 1941, and some results from the present inquiry for 1949–50.[47 49 50 53] Eight occupation groups will be mainly considered. No such information is available before 1911, and no other occupation groups can be followed through all five periods. The classification of occupations (and therefore the composition of the groups) varies a little in the different years, which makes for difficulties in comparison; and there are also some slight changes in the definitions of the mortality-rates. Such points, however, are not considered important in the present context; they will be dealt with in the final report.

Occupation Groups Considered in this Analysis

The social class to which the group is now assigned is given in parentheses.

A. *Professional Workers* (I).—All the occupations in social class I—e.g., medical practitioners, consulting engineers, administrative Civil Servants. The higher ranks of business are represented here also, but they form a small minority of the group.

B. *Farmers* (II).—Farmers and their relatives, land and estate agents: the great majority simply described as "farmers," which includes "smallholders."

C. *Teachers* (II).—Including university professors and lecturers.

D. *Clerical Workers* (III).—Clerks, secretaries not described as "company secretaries," office-machine operators, &c.

E. *Textile Workers* (III and IV).—Skilled and partly skilled workers in the textile industries.

F. *Miners* (III).—Hewers and getters, and subordinate superintending staff: the great majority being hewers and getters in *coal* mines.

(IV).—Partly skilled workers underground and on the surface in mines: the great majority in *coal* mines.

G. *Farm Workers* (IV).—All agricultural workers apart from farmers (social class II) and market gardeners, nurserymen, &c. (who are in social class III).

H. *Building Labourers* (V).—Builders', bricklayers', plasterers', and masons' labourers; and other unskilled workers in building (mainly "navvies").

All legitimate births, single and multiple, are included in the analysis. Throughout, "occupation" refers to the occupation of the *father* of the child; no information is available about any gainful employment of the mother (and wife).[46] Father's occupation is thus an indicator of the social-economic environment of the family. Sometimes the father's occupation determines the physical environment also, since certain occupations (e.g., coalmining or agriculture) are tied to specific localities, and others (e.g., textiles) are concentrated in particular areas. Findings will be reported for mortality as a whole; in keeping with the design of the study, consideration of separate causes is postponed to a later paper.

Results

Table I and figs. 1 and 2 show the neonatal and post-neonatal mortality-rates for the various occupation groups from 1911 to 1950. The rates vary materially with the occupation of the father. To recognise this, it is necessary only to compare coalminers' or textile workers' children with those of farm workers or teachers. The post-neonatal rate is more sensitive to the father's occupation than the neonatal rate.

Uniform Decline in Occupation Groups

Following the post-neonatal rate for the individual occupation groups, it can be seen that, for this rapidly falling rate, there is a ***continuous decline*** in each group

* A series of articles reporting an inquiry made jointly by the Social Medicine Research Unit (Medical Research Council) and the General Register Office. The articles [1–4] were prepared by the Unit in collaboration with the General Register Office, and have been approved for publication by the joint working party responsible for the inquiry.

TABLE I—SECULAR TREND OF INFANT-MORTALITY RATES, 1911–1950. OCCUPATIONS AND SOCIAL CLASSES OF THE FATHERS COMPARED. LEGITIMATE BIRTHS IN ENGLAND AND WALES

—	NEONATAL DEATHS (at ages under 4 weeks) per 1000 live births					POST-NEONATAL DEATHS (at ages 4 weeks–1 year) per 1000 live births				
	1911	1921	1930–32	1939	1949–50	1911	1921	1930–32	1939	1949–50
Father's occupation:										
A Professional workers ..	26·8*	23·4	21·7	18·9	13·5	28·3*	15·0	11·0	7·9	4·9
B Farmers	34·8	29·7	29·3	28·7	17·8	39·4	21·5	17·0	11·8	6·5
C Teachers	26·0	19·5	26·8	20·8	12·0†	31·5	22·1	10·3	8·1	4·6†
D Clerical workers	32·7	26·7	26·1	23·3	15·5	48·5	24·5	15·9	11·8	6·3
E Textile workers	44·4	39·5	38·0	34·3	18·6†	103·7	50·8	30·8	19·5	14·1†
F Miners	46·3	41·7	38·6	33·1	22·6	113·7	63·0	43·3	32·4	20·8
G Farm workers	36·5	34·2	31·7	28·4	19·0	59·6	33·4	26·5	19·8	10·0
H Building labourers ..	37·9	35·7	27·9	31·0	20·5	100·6	57·3	36·9	27·0	17·6
Father's social class:										
I Professional	26·8*	23·4	21·7	18·9	13·5	28·3*	15·0	11·0	7·9	4·9
II Intermediate	34·8	28·3	27·2	23·4	16·0	63·2	27·1	17·8	11·0	5·9
III Skilled workers	39·6*	33·7	29·4	25·4	17·8	85·8*	43·2	28·2	19·0	10·5
IV Partly skilled workers ..		36·7	31·9	27·7	19·9		52·7	34·9	23·7	14·1
V Unskilled workers ..	42·5	36·9	32·5	30·1	21·9	110·0	60·2	44·6	30·0	17·9
ALL CLASSES AND OCCUPATIONS	39·1	33·9	30·2	26·4	18·2	85·8	45·3	31·4	21·0	11·1

* The figures for 1911 require care in interpretation. In 1911 there were 8 classes of which VI, VII, and VIII were, respectively, textile workers, miners, and agricultural workers. For the purpose of this study, classes III, IV, VI, VII, and VIII of 1911 were amalgamated to form one large class corresponding to a combination of III and IV of later years. Again class I of 1911 included many occupations classified from 1921 onwards in classes II and III. In this study "class I" for 1911 includes only those occupations which were also in class I in 1921.

† 1950 only.

Numbers.—Space forbids separate tabulations of the numbers of deaths and births in each occupation group in each year. However, except for teachers, the number of deaths is always greater than 100 and the number of births greater than 7000. The smallest number of deaths is 31 for the post-neonatal rate of teachers' children in 1939, and the denominator never falls below 2700.

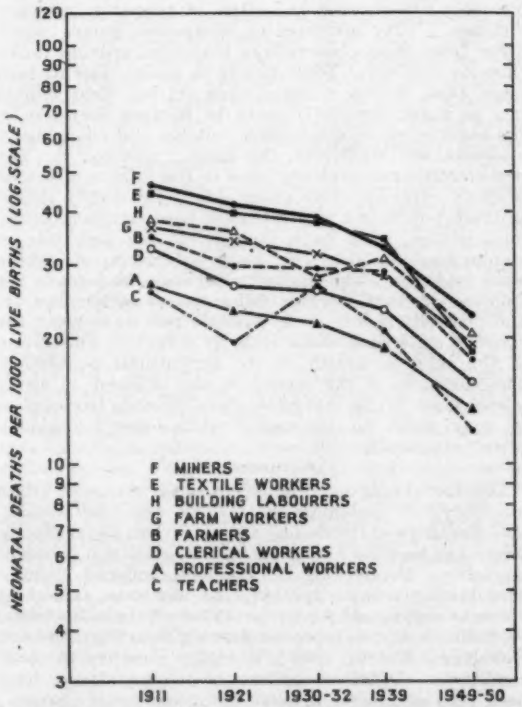

Fig. 1—Secular trend of neonatal mortality-rates, 1911–1950: occupations of fathers compared. Legitimate births in England and Wales.

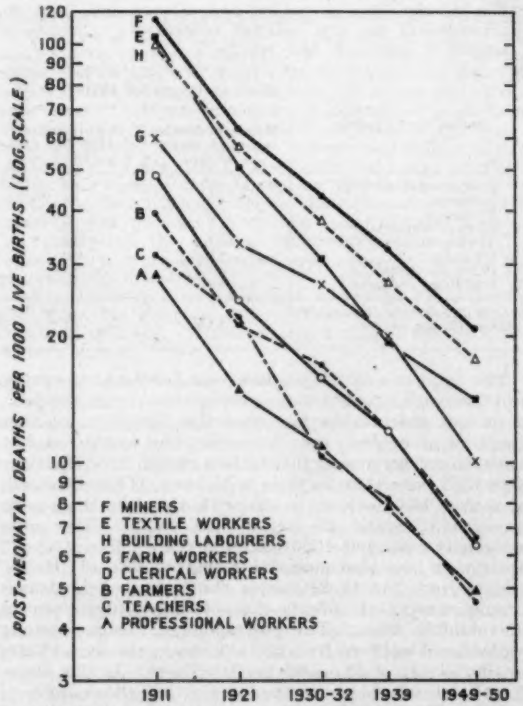

Fig. 2—Secular trend of post-neonatal mortality-rates, 1911–1950: occupations of fathers compared. Legitimate births in England and Wales.

from 1911 to 1950 (fig. 2). The neonatal rate, which does not fall so rapidly (fig. 1), shows two exceptions—teachers and building labourers—where there are irregularities, though the general trend even for these is the same. Moreover, the fall for each occupation group is in *about the same proportion*. Table II shows the percentage change in the mortality-rates over the whole period for each group. The fall in the neonatal mortality-rate during the forty years varies from 46 to 58% of the 1911 figure; the fall in the post-neonatal rate from 82 to 87%. The similarity of experience is illustrated in figs. 1 and 2 where, because a logarithmic scale has been used, occupation groups whose rates have fallen by equal proportions will be represented by parallel lines. In both figures it can be seen that the proportionate decline over the period as a whole has been fairly similar for all the groups. That is to say, the very different social experiences of these groups during forty eventful years of relative ease, of deprivation, and of stress [10] are not reflected in their infant mortality. Miners, for example, registered a steady improvement in mortality through the prosperity of 1911–21, the vicissitudes of 1921–31, the slump of the 1930s, and the later recovery. Clerks, with an economic history in no way so chequered, and recently, if anything, losing ground in comparison, showed very much the same decline. There does not appear to be anything in the choice of occupations which might be responsible for these trends. The groups are all large and fairly homogeneous. Other occupations for which there is less complete information during 1911–50—"dock workers," also a homogeneous group, and "transport workers," and "armed forces other than officers," much less homogeneous groups—show the same trends.

A consequence of the rough equality of decline among the various occupation groups is that differences between them are just as great, relatively, at the modern level of infant mortality as they were when the rates were very much higher, forty years ago. In 1911, for example, the post-neonatal mortality-rate of the children of miners (113·7 per 1000, the worst rate in the eight groups studied) was four times as high as the lowest (children of professional workers, 28·3). In 1949–50 the rate for the miners' children (20·8 per 1000) was still about four times as high as the rate for the children of professional men (4·9) and more than four times higher than the lowest rate in this period (the children of teachers, 4·6).† The gap between the highest and lowest rate was thus, if anything, somewhat greater in 1949–50 than in 1911.‡ However, the increase is slight and it may possibly be accounted for by minor changes in the composition of the groups.

† This method of comparison (expressing the highest rate in terms of the lowest, at the beginning and at the end of the period) does not, of course, use all the data. It is interesting, therefore, to compare the coefficients of variation of the rates in the eight groups during the period:

Coefficient of variation of the eight mortality-rates	*1911*	*1921*	*1930–32*	*1939*	*1949–50*
Neonatal mortality-rate	0·19	0·23	0·18	0·20	0·19
Post-neonatal mortality-rate	0·50	0·48	0·48	0·49	0·55

This alternative measure of the importance of the *differences* in the rates is remarkably constant.

It is interesting, too, that the decline in the neonatal and post-neonatal rates for all occupations taken together (i.e., the national averages) is on the high side, compared with the decline for most of the eight individual groups. This is because of the considerable increase in size, over the forty years, of the groups with favourable rates (professional workers and clerks, for instance) and the decline in size of the groups with unfavourable rates (such as textile workers and miners).

‡ Titmuss [65] gives a detailed discussion of the changes in the gap in infant-mortality rates between the social classes from 1911 to 1930–32.

TABLE II—THE FALL IN INFANT-MORTALITY RATES, 1911–50. OCCUPATIONS OF THE FATHERS COMPARED. LEGITIMATE BIRTHS IN ENGLAND AND WALES

Father's occupation	The percentage fall 1911–1949/50	
	Neonatal deaths (at ages under 4 weeks)	Post-neonatal deaths (at ages 4 weeks–1 year)
A Professional workers ..	50	83
B Farmers	49	84
C Teachers	54	85
D Clerical workers ..	53	87
E Textile workers	58	86
F Miners	51	82
G Farm Workers	48	83
H Building labourers ..	46	83
ALL OCCUPATIONS (not only those shown above) ..	53 %	87 %

The emphasis on the *proportionate* decline of the rates, and the rough equality among occupations in this respect, must not obscure the fact that the decline in *absolute* numbers of deaths, and the consequent saving of life, has been greater among the children of men in occupations with high rates than in those with low. (This statement of course has nothing to do with the fact that some occupation groups are larger than others. The comparison is made per 1000 births in each "occupation.") A drop in the post-neonatal mortality-rate of miners' infants from 114 to 21 means the saving of 93 deaths among every 1000 infants—i.e., of almost 10 per cent of the children born. The corresponding decline among professional workers, from 28 to 5, means the numerically smaller saving of 23 deaths per 1000 born. In this sense, therefore, it would not be true to say that all occupations have benefited equally; the occupations which had (and still have) the worst record have benefited the most—and very much so. It is from the point of view of ætiology—of what has caused the decline, and what causes the differences between social classes or occupations—that the proportional approach seems correct.

Comparison with the Decline in the Five Social Classes

The rough equality of decline demonstrated for the occupation groups occurs also when the occupations are grouped together into the conventional five "social classes" [24] (table I). Can anything more be learnt from the present findings about occupation groups than from the broader study of social classes? Both are aggregates of men in a number of particular jobs; the allocation to social class being mainly "based on general standing within the community." [51]

The order of the occupation groups, when arranged according to their infant mortality, may at first sight appear very similar to the order that would be obtained by arranging them in the social classes to which they are allocated; but it differs in two ways. There are occupation groups within a class whose rates are not at all similar to the rates of other occupations within the class; and this has been true since 1911. Moreover, there are occupation groups within an industry, and normally classified to different social classes, whose rates have been similar throughout the period.

Both these points are illustrated in fig. 3, where it can be seen that the post-neonatal rate for children of *miners* in social class III is very different from that for the children of *clerks* of class III. Moreover, the rate for miners' children is much the same whether the fathers are "skilled" (in social class III) or "partly skilled" (in class IV); it has been similar to that of class V throughout the period. This dismal record is true also of the neonatal rate.

Analysis in terms of social class, then, masks considerable variations within the classes. This must be expected when such large generalisations are made: thousands of real-life occupations have to be graded into only five abstract and often, of necessity, arbitrary "classes." But instances of occupation groups which differ from their class fellows may also provide useful clues to ætiology. Thus, miners in social class III earn more than miners in social class IV, but their infants fare as unfortunately—it may be because they live in the same often rather isolated villages and share many attitudes and traditions, the same "culture." [38] The persistently unsatisfactory rates in the infants of textile workers, compared with other skilled and partly skilled workers, points to a local situation needing special study (and related, some have thought, to the high rate of employment outside the home of *wives* of textile workers). [24 46 50] The similarity between the rates in the children of farm workers (allocated to social class IV, and probably rightly so in terms of real wages) and the rates of children in social class III is another illustration of the superior health of the agricultural population. The closeness of the record in the children of clerks (social class III) to that of teachers' children (social class II) may point to common "white-collar," "middle-class" standards.

Comment

One fact stands out from recent social studies of infant mortality, [24 25] including the present one—the remarkable similarity of the decline among various social groups. There has been no narrowing of the social gap in infant mortality; if anything it may have widened slightly. This finding was unexpected. At any rate, something different was hoped for in the 1930s. Infant mortality, by tradition and on repeated showing from Farr, through Newsholme and till today, is highly sensitive to social conditions. Different sections of the population have been very differently affected by recent social changes; and in the last twenty years, anyhow, full employment, higher real wages, and expanding social services have led

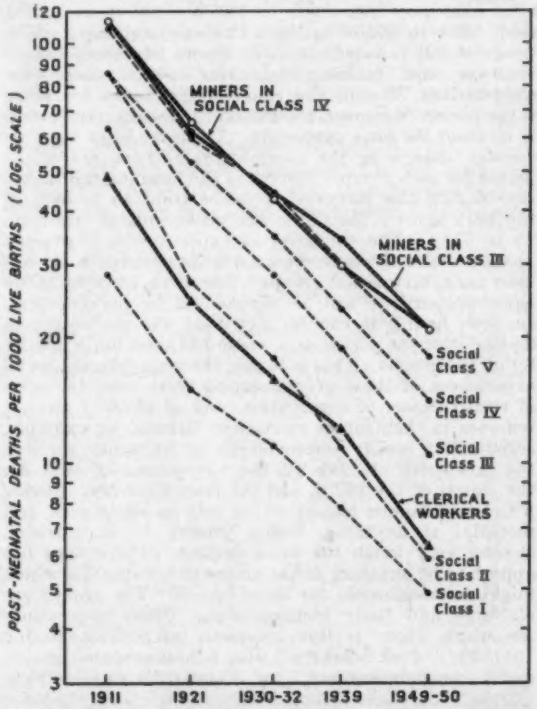

Fig. 3—Secular trend of post-neonatal mortality-rates, 1911–1950: children of miners and clerks compared. Legitimate births in England and Wales.

1911 rates are adjusted. See footnote to table I.

to relatively greater improvement in the situation of the building and dock labourers of social class V and the miners in class III, for example, than of clerks or professional people. As indicated, however, this different experience is not reflected at all in the infant-mortality rates (and this despite the fact that there was so much more room for improvement in the worse rates). Clearly it is important to consider why.

Some evidence of the recent levelling of social-economic standards may be mentioned. Weekly wage-earnings have increased more, since before the war, than salaries; and wages in "depressed" industries and of unskilled workers more than others. When allowance is made for direct taxation and changes in retail prices, male wage-earners were some 10% better off on average in 1950 than in 1938; salary-earners just about held their own; rentiers were worse placed.[9]

"In 1936, 17·7 per cent. of the people of York (a representative city) were below Rowntree's poverty line,[58] but in 1950 only 1·7 per cent. Yet in 1936 [the real amount of resources actually used by the population] was as great as, possibly slightly greater than, the amount in 1950. This strongly suggests that the whole improvement recorded in surveys such as Rowntree's had been effected by a *redistribution* of the resources available for consumption (including social services) . . . All the [old and newer] welfare schemes are largely equalitarian. Education . . . the health service . . . food and other general consumer subsidies . . . all represent proportionately greater additions to the money incomes of poor men than of rich, of family men than of the childless . . ."[44]

Whatever has happened among others, the diet of the poorer sections of the population has improved substantially since the 1930s. Weekly expenditure on food per head in the mid-1930s averaged from about 4–5*s.* in the poorest groups, to 14*s.* and up to 17*s.* (over three times as much) in the most prosperous.[6 44 56] Corresponding figures in 1950 would be of the order of 15*s.* ranging to 21*s.* (less than one and a half times)—a narrowing of the gap by two-thirds; i.e., "this substantial reduction in social class differences was achieved largely by the levelling up of expenditure on the part of the lower class."[9] (If information about expenditure on clothing were available, the approximation of the social classes might, we fancy, be even more obvious; but we have been unable to trace the necessary data.) The poorer have also benefited particularly from various "family aid" policies, such as child allowances, from housing subsidies and rent control. There is evidence that the worst housed in terms of overcrowding, have registered the greatest improvement since 1931[52]; though there is no such information about household conveniences and amenities.

All in all, there is no doubt that, comparing 1949–50 with the 1930s, for example, there has been some levelling of standards of living. What has happened since 1950 does not concern us now.

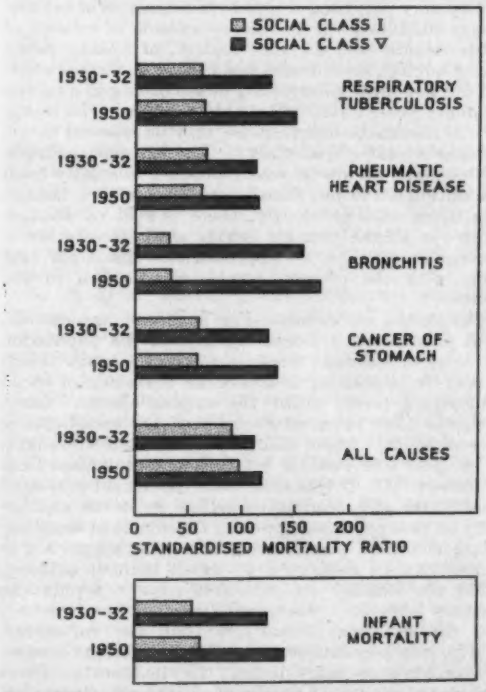

Fig. 4—Differences between social classes I and V in mortality of adult males: 1930–32 and 1950 compared for several causes of death. (Infant mortality is also shown.)

Males aged 20–64 in England and Wales. In 1930–32 the figures for cancer of the stomach include cancer of the œsophagus, and the figures for "rheumatic heart-disease" include "chronic endocarditis." Examination shows, however, that these inclusions do not invalidate the comparisons made in the diagram. For infant mortality the rates are expressed as a percentage of the rate for all classes in each period.

The Social-class Gap in Adult Mortality

In passing, it should be noticed that this similarity of decline in mortality-rates among population groups with different recent social experiences is not limited to infant mortality. In all the major conditions from which adult men in social class V had a higher death-rate in 1930–32 than social class I, the gap was as big in 1950 as twenty years before—and if anything slightly wider.[50 54] Fig. 4 illustrates this for four causes of death classically associated with poverty.§ Tuberculosis and rheumatic heart-disease have shown substantial over-all reductions in mortality during recent years.[55] In bronchitis and cancer of the stomach this is not so—which difference in behaviour does not seem to have affected the trend either way. The record social-class differences in the mortality of married women is much the same as for the men.‖ In trying to understand the recent social history of infant mortality, therefore, regard should also be paid to the more general phenomenon. The persistence of the gap between the social classes in infant mortality is unlikely to be entirely explained by factors concerned only with childbearing or the care of infants; though, for the present, consideration must be focused on these.

Maternal Age and Parity During the Period

Another preliminary point needs to be made. The ages of the mothers and size of families (which have been shown to be related to the infant mortality) may have changed in the different social classes, and occupation groups, in such a way that any tendency for the gap to narrow because of social levelling has been counterbalanced. There is no direct evidence on this point, but such information as there is tends to show that there can be no such explanation.[2 11 18 20 31 32 46] In the only direct comparison which can be made with an earlier

§STANDARDISED MORTALITY RATIOS. MEN AGED 20–64, ENGLAND AND WALES[55]

		Social Class					
		I	II	III	IV	V	V/I
Respiratory tuberculosis	1930–32	61	70	100	104	125	205%
	1950	64	62	103	95	149	233%
"Rheumatic heart-disease"	1930–32	65	92	97	111	112	173%
	1950	61	87	103	102	114	187%
Bronchitis	1930–32	31	57	91	124	156	503%
	1950	33	53	97	103	172	521%
"Cancer of stomach"	1930–32	59	84	98	108	124	210%
	1950	57	67	100	114	132	232%
All causes	1930–32	90	94	97	102	111	123%
	1950	97	86	102	94	118	122%
Infant-mortality rates (% of all classes)	1930–32	53	73	94	108	125	236%
	1950	61	76	96	115	139	228%

(It will be noticed that in 1950, in the mortality from respiratory tuberculosis—and possibly from rheumatic heart-disease—there is the same "W" trend that appeared for the first time in mortality from all causes in 1950.)

‖ Among the adults, very interestingly, in the diseases associated with prosperity rather than poverty, and showing higher death-rates in the upper than lower classes—coronary heart-disease and diabetes in men, and cancer of the breast, for example—the gap in mortality between social class I and social class V has tended to narrow in recent years.[50 54]

period, namely between the stillbirth-rates in 1939 and 1949, correction for differences in age and parity shows no narrowing of the gap between the social classes:

STILLBIRTH-RATES STANDARISED FOR MOTHER'S AGE AND PARITY [3]

Year	Social Class				
	I	II	III	IV	V
1939	23·4	29·3	33·2	36·3	37·2
1949	14·3	18·9	21·5	23·2	26·0
% decrease	39	35	35	36	30

Differences nowadays between social groups in the ages and parities of the mothers affect the over-all infant-mortality rates of the groups very little. The reasons for this have been discussed,[3 4] and are likely to have been as applicable in 1911 as they are now. This last statement is supported by examination of the data for the fertility of the wives of men in different occupations in 1911,[48] and the same report also includes some mortality data for their children. The Family Census has recently shown moreover, that, so far as the comparison can be made, family sizes were reduced during the period under observation by about 30% among all the occupational groups they studied.[13]

Three Suggestions

Three lines of speculation about the recent social trends of infant mortality can be suggested: the *first* is concerned with time-lag in the improvement of health as a result of social improvements; the *second* approach deals with the changing composition of social groups; the *third* emphasises that the whole question—a crucial one for contemporary social medicine—is still open.

1. *Time-lag.*—Very little is known about patterns of family expenditure in different sections of the population. But on the available evidence it cannot be assumed that money devoted to the care of the family increases among all classes as soon, and as much, as money wages increase.¶ [45 57 60 66] There may be delay therefore in the expression of such rising standards of living in better health. There may be a lag also in the knowledge of, use by, or availability to, families in social classes IV and V of new scientific advances, of services, and of facilities, compared with classes I and II. The better educated, that is to say, may have benefited more from recent medical progress than others.[62] The disappointing take-up of "welfare" vitamins may be recalled here.[36] The period being studied, 1911–50, saw the great expansion of personal preventive medical services. But in 1946 it was found that antenatal services were used most by the "middle classes."[35] A further survey in 1953 confirmed this observation, and showed that the greatest improvement since 1946 had been among the wives of skilled manual workers, not those in classes IV and V.[30] This may be an example of "cultural lag," of family traditions (the influence of grandmother?) which might be counteracting the benefits of community provision. There may be an illustration here also of the general phenomenon of resistance to change—that it is easier to continue along existing lines than to learn and change; which may explain the continuing low rates of the clerks and high rates of the miners. Then, in longer terms, capital assets may be more important than current income in the needs of maternal and infant well-being, and hence in determining the death-rates. (By "capital" such goods are meant as housing and its amenities, and education.) These are slower to change with an increase of real wages and the passage of legislation, than expenditure on immediate needs which can rapidly rise (and fall).[40 63] There has been some narrowing of the gap in respect of capital goods such as housing; but the equalising effects of the Education Act, 1944, may take a long time to show in infant mortality. It may well be that as the gains of full employment and the Welfare State are consolidated, the "capital" of the sections of the population which were poor in the 1930s will increase, and they will begin to overtake the infant-mortality record of the more prosperous instead of merely keeping in step with it. Finally, the notion of "generation mortality" [21 24]—that the levels of death-rates during later life of a population cohort are settled early in its life—might possibly be extended here; in particular to the rates of stillbirth and neonatal death among women the foundation of whose own healthiness and unhealthiness was laid down during years of economic depression, and before the most recent and substantial social advances.

The upshot of this line of speculation is simply that the time factor may be all important in understanding the social history of infant (or any) mortality. We may be on the wrong time-scale in expecting that the Welfare State should already have had specific effects on the class differentials in infant mortality. The slow narrowing of the gap between income groups in the stature of their school-children [5] may thus be illustrating the significance of the time-scale in physiological terms. In terms of morbidity we do not have the necessary data; but we should be very surprised if social-class analysis of organic disease in childhood—of nutritional anæmia in infants, of infantile rickets (and for that matter, of rickety pelvis in young adults), and of such conditions as chronic otitis media did not show a narrowing of the class gap over the past twenty years: i.e., quite rapid changes. The recent history of rheumatic heart-disease may be relevant to the problem as it relates to mortality. The difference between social-economic groups in young people's mortality from this condition is now less than before the war [39 55]; though in adults, as said previously, there is still no change. The rates in all the younger groups are now very low—beginning, it may be, to approach the minimum rate possible with the present genetic constitution of the population?

2. *Population movements.*—For a second speculation, the composition of different sections of the population needs to be considered; because among the many things that may be happening is a peculiar balancing of social and biological forces within the various classes. Great movements have taken place between the social classes in recent years. About half the adult men nowadays, there is reason to believe, are in a different class from their fathers.[12 29] If this inter-class movement is related to health, the sick tending to decline in status and the healthy to rise, processes opposing the effects of economic levelling could be postulated. That this suggestion is pertinent can be supported by much indirect evidence (*a*) that the healthy do, selectively, leave populations (migration from the "depressed" areas in the inter-war years, for example); and (*b*) that the unhealthy, similarly, join populations (changing to different occupations—because of heart-disease, for instance). These questions are among the staples of social medical research, and proper consideration of them would take us too far afield.[7 14–17 22 23 26 27 42 43 55]

An original explanation along such lines of recent class trends in infant mortality has been propounded from the current Aberdeen study of primigravidæ.[19] It has been shown there that the women whose fathers were in social class III, but who themselves have married men in social classes IV and V, have higher "obstetric" death-rates and a higher proportion of premature babies,

¶ A pointer to contemporary values, of the kind that needs investigation is this quotation:

"An example of the commercial effects of working-class prosperity is the rise of the specialised 'baby shop.' In 1939 there were perhaps two hundred shops [in London] selling cots, perambulators, nursery furniture and playthings, and other accessories; there are over five hundred today. The market in baby goods is one of the nearest things to a *single-class market* that this country has. An expensive perambulator will sell as readily in the East End as in the West End. Parents of the nineteen-thirties could often afford only a cheap 'folder' for £3 or so; today they spend an average of about £20 on the 'pram' and its accessories." [16]

than women who have changed in the opposite direction—i.e., have moved from classes IV and V to class III. It appears, too, that women who thus change their social class at marriage tend to have characteristics in common with the women in the class to which they transfer, rather than the class from which they come—including characteristics which affect the "obstetric" or "perinatal" mortality-rates, such as general healthiness, physique, and education.[19] Since social class V has been shrinking in size during recent years, such a process could well be cumulative, and counteract the benefits of social advances. (The theoretical bridge between this notion and "generation mortality" is readily apparent.) The *contemporary* environmental factors—the situation into which the women have moved—need to be considered, however, as well as host factors; and they must be important. The question should be clearer when analyses are available for post-neonatal mortality with its apparent special sensitivity to current social conditions.

3. *An open question.*—The notions of "similarity" and "equality" of decline have been much used in the foregoing discussion of mortality trends. The third line of speculation emphasises this similarity of experience of various groups. If the processes considered above are operating (and they probably are, although how importantly and in what combination it is not yet advisable to guess), the *constant* relationship between classes and occupation groups still remains to be explained. All these processes may be cancelling each other out; but it would be truly astonishing if they have happened to balance so nicely. It might, perhaps be accepted that they have done so in the five social classes. The present paper, however, shows that the infant-mortality rates in different occupation groups have declined with the same rough equality over the forty years; and that this is true for both neonatal and the post-neonatal mortality-rates, with their different immediate and underlying causes. The decline in the stillbirth-rate has also been nearly equal in the five classes so far as the records show—namely, since 1939. The parallelism was unaffected by the therapeutic revolution of recent years, and applies equally before and after it. It has been shown, moreover, that the decline has been similar in different parts of the country, and whether the parents lived in the large centres of population, in smaller towns, or in rural areas.[33 52 61]

To invoke a "balancing-out" argument (such as was advanced for the second "speculation") to account for all this seems to be postulating too much. It is still conceivable that the "lag" in the impact of social changes on the infant-mortality rates can largely explain the parallelism of decline; but if so it must be a long lag—longer than has hitherto been thought, and other factors than are usually considered are surely involved.

The theoretical possibility should, however, be raised that none of the foregoing suggested explanations will suffice—that the mortality-rates of the various social groups maintain their relative positions for some reasons as yet unexplained. It is possible that the social levelling and the scientific advances of the past half-century have scarcely affected the underlying reasons for the differences between the mortality-rates of the class and occupation groups. In other words, the basic causes of the differences are distinct from the causes of the decline. If this is so, what are the underlying reasons for the social differences in infant mortality? The environmental factors are clearly more than simply physical and economic. Perhaps differences in "maternal capacity" [40] will provide part of the explanation: that is to say that, though risks are lower, medical knowledge greater, and care universally better, there will be differences between the ability of mothers to protect their children; and these differences may in turn be related to the social groups which have been studied. The emergent principle of modern public health [37 41]—that individual behaviour and personal responsibility are becoming crucial to further advance—may thus apply to the field of infant mortality in terms of maternal care. Nor should the possibility be ignored that genetic factors may be important—though it is increasingly difficult to maintain this about the present problem. Meanwhile miners and clerks—their experience since 1911 and their contemporary record—provide an "experiment of opportunity" wherein much that is important in today's infant mortality might profitably be sought.

Summary

The neonatal (first four weeks) and post-neonatal (remainder of the first year) mortality-rates for legitimate children of men in various occupation groups—professional workers, farmers, teachers, clerks, textile workers, miners, farm workers, and building labourers—are presented for the five periods 1911, 1921, 1930–32, 1939, and 1949–50, in England and Wales. Mortality-rates have declined remarkably uniformly since 1911, and by approximately the same proportion in each occupation group. These findings are compared with similar observations that have been made relating to the five "social classes." Such results were unexpected; and three lines of speculation about them are put forward:

(1) There is a time-lag in the expression of social improvements in improved health.

(2) The composition of social groups is not static, and this may affect their mortality-rates.

(3) The reasons for the persisting social differences in mortality are in fact imperfectly understood.

Some of these questions will be considered in other papers.

We are grateful to the staff of the General Register Office for professional, technical, and computing help; to friends and colleagues for criticism and advice; and to the staff of the Social Medicine Research Unit for much work, in particular to Mrs. I. R. Murray (secretary) and Mrs. V. P. Hall (computer).

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Public Health

ANTHRAX AND BONE-MEAL FERTILISER

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Davies and Harvey (1953) described thirteen cases of malignant pustule in factory workers who handled sun-dried bones imported from the Far East, and a further case in a lorry driver who took away from the factory empty sacks which had contained such bones. They were of the opinion that, in Wales, most cases of anthrax in man could be traced to infected sun-dried bones imported from the Far East.

Our experience confirms that of Davies and Harvey: since 1952 six patients with cutaneous anthrax have been admitted to King's Cross Hospital, five of them from the County of Angus and one from Dundee; in each case there was evidence that the source of infection might have been infected bone-meal.

Case-reports

Case 1.—A man employed on a farm as a tractor driver developed a typical anthrax lesion involving most of his right cheek. He was treated with sulphadiazine, penicillin, streptomycin, and anti-anthrax serum. He made a good recovery with minimal scarring. Investigation of the source of infection revealed that he had sustained a minor injury to his face five days previously while treating a grass field with bone-meal fertiliser.

Shortly after he had become infected a sheep and a bullock died of anthrax on the same farm.

Case 2.—A farm labourer was admitted to hospital very seriously ill with a small anthrax lesion of his neck, very gross œdema, and toxicity. A petechial rash was present over the upper part of his chest. He died despite intensive treatment with streptomycin, penicillin, and chloramphenicol. He was also given anti-anthrax serum in an effort to control toxæmia. Seven days before his illness he had been engaged in treating fields with bone-meal.

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Case 3.—A nurseryman had a small typical anthrax lesion of his neck, with moderate œdema but only slight constitutional upset. He made a good recovery after treatment with combined penicillin and streptomycin. Before his illness he had been spreading bone-meal as a fertiliser for plants and shrubs.

Case 4.—A Dundee dock labourer had a malignant pustule on his forehead, with considerable œdema of his face and neck. He was severely toxic. Treated with combined penicillin and streptomycin he made an excellent recovery. Five days before his illness he had been unloading a cargo of crude bone-meal. He did not actually handle the bags, but there was a good deal of "bone-meal dust" around in the process of unloading.

Case 5.—An agricultural worker had a lesion typical of anthrax on his neck, with moderate surrounding œdema, accompanied by considerable constitutional upset. He made a good recovery after treatment with combined penicillin and streptomycin. He had been spraying bone-meal fertiliser about a week before his illness.

Case 6.—A mechanic's labourer, who had no agricultural connection other than working in his own garden, developed an anthrax lesion on his right forearm, with surrounding œdema but very little general upset. Combined penicillin and streptomycin was effective in clearing the lesion. Immediately before his illness he had been handling bone-meal as a fertiliser in his garden.

Bacteriological Findings

The laboratory investigation of the patients consisted in examination of smears for the presence of organisms morphologically resembling *Bacillus anthracis*, and in culture of swabs taken from the lesions.

RELATIONSHIP OF BACILLI ON MICROSCOPY AND CULTURE

Case no.	Bacilli in smears	Culture
1	+	+
2	+	+
3	?	−
4	+	+
5	+	+
6	+	−

In the present six cases we demonstrated organisms morphologically resembling *B. anthracis* in smears in five and isolated *B. anthracis* in four (see table).

In case 3 on microscopy a few "ghost-like" bacilli were seen which stained very poorly with methylene-blue and Giemsa and were gram-negative.

The four strains isolated gave typical colonial and morphological appearances and were pathogenic for mice and guineapigs, giving the typical post-mortem appearance in these animals.

The sensitivity of the strains was tested in vitro by a plate technique using Evans's sensitivity discs, and all the strains were sensitive to penicillin, streptomycin, chloramphenicol, aureomycin, and oxytetracycline.

Bone-meal.—Samples of bone-meal handled by cases 2–6 were obtained, but we were unable to isolate, or demonstrate by other methods, *B. anthracis* from them. Dr. A. J. H. Tomlinson, however, isolated *B. anthracis* from the bone-meal associated with cases 3–5. In cases 2, 3, and 5 the bone-meal came from the same commercial batch, and the time of occurrence of the cases extended over two years.

Discussion

Bacteriological proof that the infection came from handling bone-meal was obtained in three of the present cases; and presumably it arose in the same way in the remaining three cases. In the case of the dock labourer the bone-meal was in crude form, but in the five other cases it was refined. It therefore seems that either this refined product had not been subjected to any process intended to sterilise it, or such a process had been inadequate to destroy the spores.

In January, 1953, the Minister of Agriculture stated, in reply to a question in the House, that "there was little doubt that imported animal products, such as bone-meal,

were a fairly common source of (anthrax) infection. As a first step the Ministry of Agriculture was now discussing with the appropriate trade associations further measures to reduce the risk from this source" (see *Lancet* 1953).

Bone-meal appears to be used extensively as a fertiliser not only by the agricultural community but also by a wide section of town-dwellers in their gardens. It is obviously desirable to ensure that bone-meal used in this country should be rendered safe from the hazards of anthrax.

Summary

Six cases of anthrax occurring in Dundee and district are described.

These cases occurred over a period of two years (1952–54).

Imported bone-meal from the Far East was the source of infection in three cases and probably also in the other three.

We wish to thank Prof. W. J. Tulloch for his interest and advice; Dr. J. M. Thomson, medical officer of health, County of Angus, and Dr. E. H. Weir Duncan, medical officer of health, Greenock, for samples of bone-meal; and Dr. Tomlinson, of the Public Health Laboratory Service, for isolating *B. anthracis* from samples of the bone-meal associated with cases 3–5, and for allowing us to cite his findings.

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Diphtheria since 1945

In support of its diphtheria prophylaxis campaign the Ministry of Health has issued the following figures for diphtheria notifications and deaths in England and Wales over the past 10 years [1]:

Year	*Deaths*	*Notifications*
1945	722	18,596
1946	472	11,986
1947	244	5609
1948	156	3575
1949	84	1890
1950	49	962
1951	33	664
1952	32	376
1953	23	266
1954	9	182

The deaths include "late effects"—i.e., those taking place more than a year after the acute episode. Figures for 1954 are provisional.

The object of the campaign is to secure immunisation of at least 75% of babies in the first year of life. The proportions immunised were 28% in 1951, 31% in 1952, 30·4% in 1953, and 35·75% in the first half of 1954.

1. Ministry of Health, Circular no. 5/55.

Infectious Diseases in England and Wales

Disease	Week ended February			
	5	12	19	26*
Diphtheria	16	14	16	13
Dysentery	979	1110	1145	1237
Encephalitis:				
Infective	1	2	2	1
Postinfectious	1	..	1	1
Food-poisoning	137	94	112	125
Measles, excluding rubella	12,729	18,367	19,978	23,700
Meningococcal infection	43	24	43	24
Ophthalmia neonatorum	39	30	48	32
Paratyphoid fever	7	4	3	3
Pneumonia, primary or influenzal	1157	1156	1021	924
Poliomyelitis:				
Paralytic	9	9	13	9
Non-paralytic	4	7	8	1
Puerperal pyrexia	240	251	213	220
Scarlet fever	791	746	682	675
Smallpox	..	..	..	..
Tuberculosis:				
Respiratory	751	767	713	762
Meninges and C.N.S.	13	12	15	20
Other	96	73	101	87
Typhoid fever	8	1	4	4
Whooping-cough	2213	2065	1910	1678

*Not including late returns.

In England Now

A Running Commentary by Peripatetic Correspondents

DESPITE our personal dollar problem we hadn't been in the States for more than a few days when we realised that we had to have a car. I wasn't seriously concerned when my wife remarked upon the difficulty of transporting the week's provisions as well as the children up the hill from the supermarket. After all, shopping and care of the children are a woman's tasks. Or so I thought until we saw Dr. H. from downstairs returning home laden on a Friday evening. It was after my first journey home, with two enormous brown paper bags full of groceries, that I made my decision. Surely, I argued, a man in my position, and with my professional responsibilities, needed a car. It was just after Christmas when I began the rounds of the used-car lots. Curiously my rapport with the dealers always deteriorated when they learned how much I had to spend—but then I came to Bill. Bill was a Canadian, and a sort of Commonwealth solidarity made us pals from the start. He it was who introduced me to Josephine, as she was later christened by the children. She was then just a dark green coupé, in need of a coat of paint, standing forlornly in the lot. A 1941 model, with 89,000 miles to her credit, she was a vintage specimen by American standards; but as I examined the independent front suspension, fluid drive, steering-wheel gear-change, radio, and heater, I could feel myself weakening, particularly when she started at a touch. "She's yours for a hundred bucks," said Bill, and in no time I was writing out the cheque. I was only slightly chastened when I discovered that the insurance would cost more than the car.

It was New Year's Day, one of those glorious crisp and sunny New England days, when I brought Josephine home to meet the family. "You can even lock the doors," I pointed out, turning the key. I must say Bill was very good; he was up within half an hour with a new ignition key, and soon extracted the broken fragment from the lock. Next day we drove to hospital; I didn't notice the snow till it was time to go home, and by then poor Josephine was submerged. Laboriously I uncovered her and climbed in; but the battery was dead and I went home by bus. For several days she lay there until the thaw came, and Pete from the garage next door came round and gave her a push. At once she started, and we were on our way; we hadn't gone more than half a mile when the engine stalled. In the din of the traffic flashing by on either side, Josephine lay silent, unperturbed and unresponsive, while the cacophony of impatient horns in the cars behind mounted in intensity. At long last the Buick in the rear nosed his bumper up to mine, gently accelerated and she came to life again. Four times more on the journey she stalled, and when finally I reached Bill's garage I was prepared to admit that being a car-owner was quite a responsibility.

Space will not permit me to detail her many later frivolities, such as the occasion when she ran off down the drive by herself, or her many electrical failures invariably solved by a smart blow with a hammer on the battery connections; and, though we secretly felt it to be over-indulgence, we never divulged to her our feeling that no real lady should require four quarts of oil each week. But when we came to understand her better and to indulge her minor fancies she never failed us.

When the time came to return home the parting was a sad one, for we were losing a member of the family. Now we have a new car and the children have tried to christen her Betsy, but she has so little character that it hasn't caught on; certainly there can never be another Josephine.

* * *

Amateurs of hydriotaphia can find few pleasanter spots in which to hydriotaphe than the British Cemetery, Funchal. Quiet and secluded behind high walls under the old Fort, cypress-bowered and decked—in February—with mimosa, sprawling scarlet geraniums, iris, and violets, its urns and tablets reflect the changing patterns of mortality. The earliest date we found was 1809. The British occupied Madeira from 1807 to 1812, and the tablet commemorates Emma Frances, the wife of Lieut.-Colonel Peachy,

aged 25. For some 50 years after, the deaths are chiefly of mariners, soldiers, consular officials, West African traders and others who escaped too late from the yellow fever and malaria of the White Man's Grave, among them Mr. John Duguid, aged 21, " late Student of St. Bartholomews Hospital," who died in the year of Waterloo. With and after them were the consumptives, such as Christina MacDowell, who died in 1839, aged 18.

" C. McD. (*sic*) gave early indications of a decided piety . . . and, when cut off by a pulmonary ailment, as mourning survivors are tempted to think too soon for them, though seasonably for her. . . ."

In a third group, beginning about the turn of the century, the age-incidence suddenly shifts into the seventies and eighties, with the advent of the wealthy English invalids and *malades imaginaires* whose lives the warm winter sun of this island paradise successfully prolonged. We found a grim reminder of a disease which has quite changed its character—and may do so again—in a tablet to " James, Charles and Robert Payne, who died at the early ages of 5 years, 3 years and 18 months " in June, 1857, of scarlet fever. Incidentally, the lettering of the pre-1850 tablets, presumably done on the island, showed a simplicity and beauty reminiscent of Eric Gill himself.

And who, who was " George Pepple, King of Bonny, died Nov. 1st 1888. R.I.P." ?

* * *

The Regency period saw the Industrial Revolution, and the breaking up of machinery by the Luddites. But, though the central theme in the décor at the Ideal Home Exhibition is the Regency period, it is unlikely that the army of housewives streaming to Olympia are bent on rebellious violence. Here they can study all the latest machines designed to ease the housework; electric polishers, washing machines, automatic wringers, and electric mixers can all be seen in action. For those without electricity, or who need help at a more modest price, there are new types of dusters and floor brushes with two revolving circular heads. The main hall is filled with furniture, the modern style being particularly prominent, and with cooking and the larger electric appliances; also on the ground floor are the Nylon Fair (limited, rather disappointingly, to stockings on false legs), the toy section, dominated by the painting-by-numbers sets, and the modern houses built together as the Houses on the Hill. On the first gallery are the stalls of household gadgets and the Food Fair, as always offering many little snacks. Also on this floor, in one corner, there is *Family Doctor* Street, with the *Family Doctor* grocery shop and the *Family Doctor* drapers, selling ordinary branded articles. The caravans, a R.A.F. bungalow married quarter at present being built in Cyprus, and the do-it-yourself exhibition are on the second floor. Downstairs again, the gardens are a retreat from bleakness and snow outside. Among the flower gardens is a vegetable garden with much produce growing succulently. At the entrance to the gardens are stalls that show that not only housework is becoming mechanised. Besides small ploughs and rotary hoes you can now buy some of your seeds already sown. Indeed, if the Regency was the era of the Industrial Revolution, today is the era of the Domestic Revolution.

* * *

I am no stickler for priorities, but I really don't see why your young contributor's examiner, even though " an eminent physician by all standards," should get away with the credit for suggesting a method using Benedict's reagent which would " save the country £50,000 a year." If your contributor turns to p. 282 of the ninth edition of Joslin's *Diabetic Manual* (1953) he will find that this shrewd Grand Old Man of diabetes had already thought of it.

" Four drops of the urine to be examined are placed in a test-tube and to this are added 2·5 cc. (an ordinary teaspoon holds about 5 cc.) of Benedict's solution. The test as originally described was performed by using 8 drops of urine and a trifle more than a teaspoonful of Benedict's solution, but if the smaller quantity is employed universally by diabetics, I once reckoned it would amount to a saving of more than $100,000 a year. What a sum to apply for the study and care of patients with diabetes ! "

Letters to the Editor

AFTER THE ACCIDENT

SIR,—Commenting, on Feb. 5, on the Sutton Coldfield railway accident you spoke of the need of " detailed preparedness " for the evacuation of casualties after any disaster. But what is equally necessary, and much harder to achieve, is " detailed preparedness " at all times for the *treatment* of the severely injured, whether they come in large numbers or singly.

We now know that, even with severe multiple injuries, life can often be saved by early transfusion—but only if surgery follows quickly and at the right time. We know that surgery is most effective when the blood volume has been restored to normal, and that this often requires very large transfusions.[1] And we know that the long " illness of trauma " can be prevented only by early restoration of blood volume, by early surgery aimed both at repair and at the prevention of infection, and by the very careful postoperative treatment lasting many days. Yet many people remain reluctant to accept the plain fact that this kind of skilled treatment, at the right time, can be provided only by hospitals normally staffed and geared to the handling of such emergencies.

After any serious accident, the chief need is to get the injured people quickly under the care of surgeons experienced in the clinical diagnosis and assessment of severe injury; and, since the rescue and ambulance services complete their task with remarkable rapidity, it would seem wise to continue to lay emphasis on " speed of evacuation " to prearranged hospitals. It is these hospitals that have to be kept in a state of " detailed preparedness " to treat casualties, either single or numerous.

After the Sutton Coldfield accident the whole-time staff of the Birmingham Accident Hospital were very quickly mustered. Those off duty quickly returned and were fully prepared, with all facilities at hand, when the first serious casualty arrived, after a ten-mile journey, just 45 minutes after the crash.

Should the numbers of very severely injured prove too heavy for one hospital, then the first 50, say, could be received by that hospital, giving time for a second hospital to collect its staff and prepare for the next wave of casualties. Two such hospitals could take the full initial responsibility for the casualties from almost any peace-time disaster.

An essential part of the mass casualty scheme agreed for Birmingham is the forwarding of precise information to the medical officer at control headquarters. In so far as this concerns the treatment of the seriously injured, he requires to know the numbers of the injured and their needs. After an accident such as the one at Sutton, this information may not be available for some time. Very precise information can, however, be given by " receiving " hospitals on such important matters as the need for more help from the regional blood-transfusion service, or the need to alert further surgical teams at other hospitals for reparative surgery if this load becomes too heavy. When necessary, patients can be sent on to these other hospitals with a reasonable diagnosis and with all the benefits of full medical first-aid.

Unfortunately, such well-equipped and well-staffed accident hospitals and accident departments as we have in Birmingham are to be found in few places. But they are an essential part of " detailed preparedness " for the treatment of severe injury, and mass disaster does no more than spotlight the need for them. The annual national casualty-list from accident (10,000 killed, over 200,000 seriously injured, and over 1,250,000 requiring hospital treatment) underlines this everyday need.

The Ministry of Health, however, believes that to initiate any change of policy in this matter, there

1. Ruscoe Clarke, Topley, E., Flear, C. T. G. *Lancet*, 1955 (in the press).

must be a solid weight of clinical opinion in its favour; and neither clinicians nor administrators are widely and strongly interested in the development of an efficient accident service. In direct evidence of this is the fact that, in the 14 years of the Birmingham Accident Hospital "experiment," we have lost many of our well-trained and experienced staff—not because the technical and human challenge of the work is unattractive but because more favourable and less exacting conditions have been offered elsewhere.

If a long view is to be taken, we must consider not only the detailed planning and strategic siting of large accident departments attached to general and teaching hospitals, but also the terms of training and service of the personnel—at all levels—needed to staff such emergency services over the 24 hours of each day. Since the organisation must always be fully prepared, it cannot in heavily populated areas be a "part-time" service or a minor responsibility.

Our rescue and ambulance services already function with commendable efficiency; and the most seriously injured, if evacuated quickly, travel ten miles and more comparatively safely, even with our present design of ambulance. With better ambulances the "safe" distance might well extend to twenty-five or thirty miles. In a small country like ours, the strategic siting of fully equipped and staffed accident services, each attached to a large general hospital, would go a long way to ensure proper medical care for all the many people who are seriously injured on road or railway, at work or in the home.

Birmingham Accident Hospital, Birmingham, 15. WILLIAM GISSANE.

HOSPITAL STAFFS

SIR,—I was very interested in the tables issued by the Ministry of Health on the consultant and senior registrar establishment.[1] Clearly little increase is likely in the consultant establishment, as will be seen from table II which gives the numbers of consultants in each specialty. From Dec. 31, 1952, to June 30, 1954, the increase in the numbers of consultants in general medicine, general surgery, and obstetrics and gynæcology was 12, 0, and 4 respectively. Most of the other specialties show very little increase during this period. The present figures therefore seem to be stable.

I am surprised to see that the retiring age of 65 is not being enforced, since there are so many senior registrars clamouring for posts. In the three major specialties, where the congestion is greatest, there were 23 physicians, 31 surgeons, and 11 gynæcologists over 65 (born in 1889 or earlier) who had not retired when this table was compiled. Though it is quite possible that each of these may only have a few sessions, their retirement would make at least some vacancies. As there is to be no further significant expansion of the consultant services it seems scandalous that fully trained senior registrars are being thus prevented from obtaining these retirement vacancies—now virtually their only hope of promotion. Before the health service most hospital boards made 60 the retiring age.

In table III (senior registrars in each specialty), taking general medicine only, there are 22 senior registrars in their fourth year and 77 "others"—which presumably means men in their fifth and subsequent years—making a total of 99. In other words there are 99 candidates seeking posts which will become, or should become, vacant through retirement. According to table I, there should be 13 in 1955, 18 in 1956, and 11 in 1957, but as each retirement may only represent a few sessions the number of actual appointments will be less than this, probably an average of about 10 a year. Senior registrars in their fourth and subsequent years therefore only have about a 10% chance of a consultant vacancy in their specialty.

1. See *Lancet*, Feb. 26, 1955, p. 448.

Something *must* be done for these men, who are fully trained and presumably are fully competent since otherwise they would not have reached and retained their present status. I hope that the new committee set up by the Ministry of Health will consider what practical steps can be taken to help them.

Mayday Hospital, Thornton Heath, Surrey. G. P. BAKER.

SIR,—The "break-down" of figures for consultant staffs published by the Ministry of Health, reveals strikingly uneven expansion.

Numerically approximately equal groups are made up by: (A) major specialties (general medicine, general surgery, obstetrics and gynæcology [2106 in 1949]); and (B) specialties in which full clinical responsibility is the exception (mental health, radiology, radiotherapy, physical medicine, pathology, anæsthesia [1901 in 1949]). The expansion in the number of consultants and the present numbers of senior registrars are as follows:

	Expansion since 1949 (%)	*Present no. of senior registrars*
Group A	13	510
Group B	36	289
All specialties	25	—

These figures do not take account of the further surplus in group A of potential specialists holding university and other appointments.

It may be argued that it was in the non-clinical specialties that the need for expansion was greatest. But clearly the present numbers of senior registrars in group A represent highly trained man-power required to meet definite clinical needs and not merely "trainees" retained for future needs. It follows that real levelling up of expansion is needed in those general categories which have been, and always must be, the basis of a hospital service.

SENIOR REGISTRAR.

SIR,—Not every good man is fortunate enough to come along at the right time for a registrar vacancy in a teaching hospital.

For several years after the beginning of the health service many men, as good as those who obtained registrar appointments in teaching hospitals, went into the regional hospitals. The experience and training these men have obtained in many of the large regional hospitals have been as good as are obtained in the teaching hospitals.

When it comes to a consultant appointment, however, the regional man very frequently comes up against an attitude of mind which immediately places him in an inferior position. Most of these men never even reach the short list to get a hearing. There is in the hospital service today one-way traffic through the teaching hospitals to most senior appointments, particularly in the three main specialties, in all hospitals. The interchange system for senior registrars was brought in with the main intention of trying to right this situation and give some incentive for men to take house-officer and registrar posts in regional hospitals. With few exceptions this intention has been frustrated by the one-way traffic system at this level.

For nigh on two years now the profession has been deliberating how to staff the regional hospitals. The creation of a new type of post in regional hospitals, passage through which will be the normal way to consultant posts, will do nothing to staff regional hospitals when one-way traffic is in operation.

Honourable men have laboured with good intent to try to find a solution to this problem, but within constraints which make the problem insoluble. These constraints are mainly attitudes of mind which stem from the past but are not applicable to the present or the future.

REGISTRAR.

HEALTH EDUCATION

SIR,—Health education in this country has always been viewed with mixed feelings by our profession. The reasons are many, and justifiable. Perhaps the two most important are that medicine, even today, is still as much an art as a science, and if no two doctors can always agree in detail about the care of one patient, how can they agree in principle about the conduct of an incompletely delineated condition? For Dr. A to talk in simple terms of a disease complex in the abstract, and then Dr. B's patient to tell him just how he should be treated (according to Dr. A) is awkward. Secondly, there exists the genuine feeling that, in describing the details of signs and symptoms of a disease and then its treatment, we may be telling a neurasthenic enough for him to confuse us, and initiate him into the realms of Munchausen's disease. "Ignorance is bliss" and "A little knowledge is a dangerous thing" are both quoted to support these points of view.

Against this the educationists say that a neurasthenic will be just as neurasthenic when he is ignorant as when he is informed, until his fears are completely resolved—and these fears mostly rest on ignorance. The trouble, they say, lies not in education, but in incomplete education. "Trust your doctor, he knows best what is good for you" may be excellent therapy for some types of elderly spinster, but does it achieve its purpose for all? We live in a technological age, and the doctor can safely discard his display of witchcraft and admit he is a scientist in some circles. Explanations of just what he is doing, and why, will often reassure patients and their families if supplied within the framework of their understanding—"kitchen similes" are valuable in many homes, and quite detailed explanations are appreciated in others. But these explanations take time; and so health education in the mass must replace, to some extent, the personal explanation.

Here television has an immense part to play, for to the immediacy of real live speakers is added the intimacy of the home circle viewing the complicated demonstrations in the studio which may have taken weeks to assemble. The size of the audience, and the fact that they all view the programme simultaneously and discuss it in unison next day, adds further to the short-term impact. Yet your reference (Jan. 29, p. 247) to the W.H.O. memorandum makes no mention of this new medium for education.

The twelve programmes which I arranged for the B.B.C. two years ago revealed conclusively that difficult and advanced concepts could be accepted and understood by a large audience when presented sincerely and clearly, and their message appreciated even by sufferers from those diseases.

Two examples come vividly to mind. One was an elderly man in hospital with a recurrent peptic ulcer who had just had a severe hæmorrhage. His surgeon was discussing his condition with him, leading up to breaking to him gently the advice that he have a partial gastrectomy. Quite soon the patient said, "I know what you are going to say, Doctor, you want to cut out part of my stomach—I was wondering when you were going to. Go ahead." He was perfectly cheerful and assured—he knew the facts.

The second example was an elderly hyperpietic who was reluctant to have E.C.G.-electrodes fitted to his arm. His wife said, "Don't be silly, Tom, it's only that machine you saw on T.V. last week"; and he was immediately reassured.

In that series I took special care to present only conditions for which a positive cure was known, or a hopeful outlook could be assured. Perhaps the time is now ripe for a further series in which some genuine difficulties which face the profession can be explained, and the different lines along which research is progressing shown.

A large new field of public education is now opening before us, whether we like it or not. The manufacturers of patent medicine have not always presented medicine impartially and accurately in their advertisements—particularly of the strip-cartoon type—and we do not want to see comparable vignettes enacted under the ægis of the I.T.A. On the other hand, other manufacturers have presented valuable factual teaching, particularly to our profession, and an extension of that practice could be of immense benefit to patients and practitioners alike. But in these programmes, whether for the B.B.C. or I.T.A., we must maintain our sincerity and honesty, and refrain from sensational journalese if we are to keep faith with our colleagues and our patients.

London, W.1. BRIAN STANFORD.

LIFE-ASSURANCE UNDERWRITING

SIR,—Dr. Khambatta's letter of Feb. 26 gives an entirely wrong impression. There are, as he says, two accepted methods of imposing special terms for life assurance—by charging an extra premium or by imposing a debt which may be either constant or diminishing. The numerical system, which is based on a series of plus and minus ratings for tabulated good and bad points, only indicates the amount of the excess mortality if any. It is therefore not an alternative method of treating extra risks but an alternative to the traditional method of underwriting by the Chief Medical Officer and the Actuary. The numerical method is in general use by American and Canadian companies, and I believe that well over 90% of cases can be accepted without submission to those responsible for underwriting. Even so the cases which fall outside certain limits of excess mortality have to be assessed individually.

I think it is probable that recent advances in medicine are far more likely to be brought into account under the traditional method than the numerical method. Surely anybody responsible for fixing a definite number to represent an excess mortality is likely to wait until he has some statistical evidence to support it. On the other hand the Medical Officer assessing a case on his own judgment can say at an earlier stage that the new methods of treating this disease are so effective that the case can be accepted at ordinary rates.

Enlightened Medical Officers were accepting a non-tuberculous spontaneous pneumothorax at ordinary rates 20 years ago, purely on their own judgment. Lenient decisions in this and similar cases have no relation to any mystical powers inherent in the numerical rating system.

Medical Sickness Annuity and Life Assurance Society Ltd.,
3, Cavendish Square,
London, W.1. E. A. J. HEATH
Manager and Actuary.

COLD BATHS

SIR,—I am delighted that at last some doubts have arisen about the wisdom of compelling school-children to take a cold bath every morning.

If school-mastering is, as Ian Hay put it, "driving a herd of unwilling donkeys up the slopes of Parnassus," the addition of cold water makes it more like a perpetual sheep-dipping. The value of such a practice seems slight, and I for one see no virtue in the faint-hearted alternative Mr. Vincent suggests in his letter last week—namely, lowering the bathroom temperature. There are far too many sepulchral bathrooms as it is, without school fees being charged to maintain conditions which would not be tolerated in a second-rate boarding-house. In a first-rate boarding-school, however, the cold bath may satisfy both masters and pupils, as it provides the maximum of discomfort to the recipient, while assuring him the minimum of cleanliness.

Shaw observed that the English frequently believe themselves to be moral when in fact they are only uncomfortable. Few of us have the sanctity to emulate the Blessed Ethelfleda, Abbess of Romsey, whose practice it was to chant the Psalms,

while immersed at night in the bed of a running stream. If mortification of the flesh is to benefit the soul (and one doubts whether it has other justification) it should be voluntary and not compulsory.

No doubt the shuddering plunge is mitigated for the spartan children, as they reflect that at the same time the headmaster and his entire staff, the matron, and the chaplain, are lustrating themselves with ice-water, to practise what they preach. Or are they?

Middlesex Hospital, London, W.1. J. W. DICKSON.

TETANUS TREATED WITH INTRAVENOUS MEPHENESIN

SIR,—In his report of a case of tetanus treated with mephenesin (Feb. 26) Dr. Docherty makes the surprising statement that the drug "does not act on the higher centres and therefore does not affect consciousness." The dosage used in this case—up to 18 g. in twenty-four hours—is low and would not be expected to have any such effect given slowly intravenously, as it was. But drowsiness is the most commonly reported side-effect of mephenesin, and I have more than once seen complete though brief loss of consciousness follow rapid intravenous infusion of the pure drug in saline. Pronounced drowsiness is almost invariable with doses of 2–4 g. given intravenously in five to fifteen minutes, and such doses can be needed in tetanus. Mephenesin in large doses is a powerful cerebral depressant, and sedation with the usual drugs may have to be reduced to avoid oversedation when large doses of mephenesin (e.g., about 10 g. in an hour) are used. Commercial liquid preparations also contain alcohol, which adds to the sedative effect.

Kew Gardens, Surrey. D. R. LAURENCE.

MENTAL HEALTH AND PUBLIC HEALTH

SIR,—In an address to a joint meeting of the Scottish branch of the Society of Medical Officers of Health and the Scottish division of the Royal Medico-Psychological Association, Dr. MacQueen [1] said:

"The Health Visitors—about one for every 2,500 people in the best staffed areas and one for every 5,000 in the worst areas—are again not experts in psychology; they have their general nursing training, with nowadays a slender introduction to psychology included, a subsequent midwifery training, and—usually after two or three years as a hospital staff nurse and a ward sister—a course of full-time study for the Health Visitor's Certificate, this course lasting at present from six months to one academic year but likely in the near future to become standardised everywhere as an academic year, and including some six or seven lectures or lecture-demonstrations on mental health."

In his letter of Feb. 26 he asks whether I am "aware of the very large amount of time devoted in the health visitor's training to the psychology of development and allied subjects."

There is no mention of psychology in the syllabus of general training of the General Nursing Council for Scotland. Mental diseases are mentioned: a minimum of two hours' teaching in the three years of training is recommended. I think that this, barely a day's work out of four to six years' training, gives an orientation towards physical illness and away from mental illness which unsuits the health visitor for work in the field of mental health.

On the other hand, our doctors get a much better impression of the importance of mental ill health during their course of training. In Edinburgh the medical student is required to attend 40 lectures on psychiatry and psychology and 20 clinical demonstrations; and there is an elective clinical course in the wards of the Edinburgh mental hospitals. The postgraduate students in the C.P.H. and D.P.H. courses get 20 lectures and demonstrations on mental health and 20 lectures on applied psychology. This may not reflect adequately the importance of mental ill health as a public-health problem, but clearly a person so trained is hardly to be compared with a health visitor.

Having said that, let me make suggestions for the improvement of the training of both the general nurse and the health visitor. Firstly, they should be made aware that a third to a half of all hospital beds are for the mentally ill, and that mental and nervous troubles approach this proportion of all ill health. There is no better way of doing this than by prescribing a period of training in a mental hospital amounting to not less than six months out of the three years' general training. The title Registered General Nurse is, at present, a misleading one. Secondly, during her post-registration training the health visitor would greatly benefit by some time spent working with the authorised officer of a local authority and with the psychiatric social worker attached to a hospital or clinic. With this additional training the health visitor would be much better qualified to work in the field of mental health.

Usher Institute, University of Edinburgh. DONALD CAMERON.

DIET AND ATHEROSCLEROSIS

SIR,—Many of your readers will be familiar with the laboratory and field studies of Professor Keys and his associates [1] bearing on the correlation between fat intake, serum-cholesterol concentration, and incidence of atherosclerosis, which is now the leading cause of death among adults in the United States and possibly in other Western countries.[2] Further supporting evidence has been published from this centre [3 4] where we have noted, firstly, that low serum-cholesterol values are found in the South African Bantu, whose fat intake provides little more than a third of the proportion of calories that it does in Americans; and secondly, necropsy evidence shows that the severest complications of atherosclerosis are far less common among the Bantu than among comparable American hospital populations.

It is thus tempting to assign considerable significance to the level of fat intake in the ætiology of the disease. At the same time there are two contradictory items of evidence which cannot be ignored and which caution against attaching too much significance to level of fat intake per se.

Firstly, the fat intake of Eskimos is high; it supplies over 40% of their calories.[5] Yet available data (admittedly incomplete) indicate that their serum-cholesterol values are not abnormally elevated; moreover, cardiovascular disease is almost unknown among these people, or, for that matter, among the inhabitants of the Yukon, who also have a high fat consumption.[6]

Secondly, low serum-cholesterol values are found among strict vegetarians despite their high fat intake: in three recent investigations fat supplied 33%, 34%, and 35% respectively of their calories.[7–9] It is not yet known, however, whether vegetarians in Western countries suffer less than non-vegetarians from severe atherosclerosis.

Arising from our investigations on the Bantu, there is one aspect which impressed us and to which attention might be drawn—namely, a low-fat intake is only one feature of their pattern of diet; furthermore, a low incidence of atherosclerosis is but one feature of their disease pattern. The Bantu diet, while probably adequate in calories and gross protein, is low in animal protein, fat, cholesterol, sugar, certain mineral salts, and vitamins,

1. MacQueen, I. A. G. *Publ. Hlth, Lond.* 1954, **68**, 24.

1. Keys, A. *Voeding*, 1952, **13**, 539.
2. Morrison, L. M. *Ann. intern. Med.* 1952, **37**, 1172.
3. Walker, A. R. P., Arvidsson, U. B. *J. clin. Invest.* 1954, **33**, 1358.
4. Higginson, J., Pepler, W. J. *Ibid*, p. 1366.
5. Sinclair, H. M. *Proc. Nutr. Soc.* 1953, **12**, 69.
6. Duncan, A. C. *Lancet*, 1947, ii, 919.
7. Groen, J., Tjong, B. K., Kamminga, C. E., Willebrands, A. F. *Voeding*, 1952, **13**, 556.
8. Donath, W. F., Fischer, I. A., Eysbergen, H. C. M., Wijn, J. F. *Ibid*, 1953, **14**, 153.
9. Hardinge, M. G., Stare, F. J. *Amer. J. clin. Nutr.* 1954, **2**, 83.

yet high in carbohydrate and crude fibre. Among these people there is a high incidence of liver disease, though a low incidence not only of atherosclerosis, but of appendicitis, eclampsia, peptic ulcer, diabetes, gallstones, urinary stones, and certain forms of cancer. To what extent pattern of diet, with its concomitant pattern of metabolism, influences the incidence of the diseases mentioned, still requires considerable investigation. But one wonders whether levels of fat intake and of serum-cholesterol must be *within* a certain dietary setting before they are of significance in regard to atherosclerosis. In other words, is one justified in being too hopeful that reduction of fat intake only in the diet of middle-class Western population groups will markedly retard or arrest the development of the disease?

Human Biochemistry Unit, South African Institute for Medical Research, Johannesburg, and South African Council for Scientific and Industrial Research.

A. R. P. WALKER.

CYTOTOXIC AGENTS IN MALIGNANT DISEASE

SIR,—In your leading article of Feb. 26 you state: "Blackburn and King [1] had no success from administration of tretamine to 4 patients with reticulosarcoma." Actually 2 of the 4 cases of reticulosarcoma responded satisfactorily to the first course of T.E.M. for periods of four and sixteen weeks.

Royal Infirmary, Sheffield.

E. K. BLACKBURN
G. M. KING.

PSYCHOLOGICAL ASPECTS OF UTERINE DYSFUNCTION

SIR,—The letter from Dr. Tylden and her colleagues (Feb. 19) contains several points upon which I wish to comment.

They feel that both their own work in 1950 and my recent paper should be considered as preliminary studies, apparently disregarding the fact that I only claimed mine to be "a pilot investigation."

Much of their criticism seems to stem from a misconception of my clearly defined field of study and the nature of uterine dysfunction, which was described as early as the third paragraph of the paper. The dysfunction group were "those cases of vertex presentation where (in primigravidæ) prolongation of labour beyond twenty-four hours, or difficulty in labour, was judged to be due *solely* to inadequate forces or to resistance of soft tissues." It is therefore surely implicit that there were no other obstetric abnormalities, and operative interference was due entirely to the character of labour. The fact that the majority lasted longer than forty-eight hours was an index of the severity of the established condition. As my article is primarily psychiatric, the rather confusing statement about their change of obstetric practice in 1951 is not germane to the issue.

Antenatal education and labour-ward management, although interesting in themselves, were part of the clinical environment, and being similar for both groups ceased to operate as a significant factor in the production of dysfunction labour.

I must dissociate myself from the ambiguous statement: "we have also found that women who showed obvious overt anxiety during pregnancy would, after reassurance, have an average labour." May I quote from my own work? "The results of this investigation, while not testing the hypothesis directly, do not offer any basis for believing that simple methods of psychotherapy, given in the antenatal period to outwardly tense or nervous women, would have had any effect on the action of the uterus during labour."

The letter ends with a quotation from Professor Nixon's paper to the thirteenth Congress of Obstetrics and Gynæcology in 1952, with which Dr. Tylden contradicts my view that prediction was not possible. I am afraid that my words have been misconstrued since my article clearly states: "it is thought that *psychiatric* methods of prediction and prevention in the antenatal period would have no effect on the occurrence of uterine dysfunction." My interpretation of the word "predict" seems to be much more exact than their more general terms, and of course I do not use the words "not possible."

Finally, I must refute the implication that we in Aberdeen are interested antenatally only in the purely mechanical elements of pregnancy and labour. That this is not the case is surely manifest not only in the title of my work, but also in the nature of my specialty.

May I turn now to Dr. Reiss's letter (Feb. 26) in which the criticism hinges on my statement that "fear, emotion, and anxiety play no part in the outcome of labour from the practical obstetrical point of view—i.e., in determining the length of labour or whether forceps will be necessary."

His criticism is particularly based on the explanatory expansion which of course I could well have omitted. It will now be clear that the phrase "whether forceps will be necessary" should read "whether operative interference will be necessary." Consequently there is no necessity for me to discuss the indications for forceps delivery.

I can reassure him that the features he mentioned—planned pregnancy, length of marriage before conception, relative fertility, and previous abortions—were not ignored, but were the same for both groups. Relative fertility was specifically mentioned in my article as it was considered one of the more important factors.

I disagree with his assertion that "the puerperium, when emotional tensions are notoriously heightened in many women, may be an unsuitable time for accurate psychological assessment." Quite obviously the patients could not be seen antenatally, nor always during labour. On the contrary, I feel that the puerperium with its heightened emotional tensions was excellent for my purpose in making material, particularly of a sexual nature, much more freely available.

I can make no comment on the purely obstetrical aspect of Dr. Reiss's letter, which is not apposite to my study; but if he cares to re-read my article he will find that I agree with him about the importance of the mother's mental outlook.

Kingseat Mental Hospital, Newmachar, Aberdeenshire.

W. A. CRAMOND.

HYPERGLYCÆMIA AFTER BURNING

SIR,—Dr. Butterfield claims, in his article last week, that dimercaprol (BAL) has a hypoglycæmic effect on the hyperglycæmia which occurs in some burned patients. The evidence upon which this claim is based is not convincing as the hyperglycæmia still persisted in his glucose-dimercaprol tolerance tests. Presumably he has distinguished the hyperglycæmia and glycosuria in his patients from the pseudodiabetic lactosuria and lactosæmia which may occur in patients whose burns are dusted with lactose-containing medicament powders.[1]

Dr. Butterfield also suggests that post-burn hyperglycæmia is to be attributed "at first" to adrenocortical hyper-stimulation and that *early* involvement of the islets of Langerhans does not take place. The former may be true but the latter should be treated with caution.

In this department necropsies have been done on a number of severely burned patients who had developed true hyperglycæmia and heavy glycosuria. Histological examination revealed that, in addition to evidence of adrenocortical hyperactivity, many showed changes in the pancreatic-islet cells which cannot be attributed to post-mortem effects. The following is a recent example:

A girl, aged 5 years, suffered burns involving 50% of her body area and survived sixteen days. Eleven days after burning heavy glycosuria and hyperglycæmia were found (blood-sugar 380 mg. per 100 ml.). The glycosuria (8–10% glucose) and hyperglycæmia were confirmed on several occasions and the "sugar" was proved to be glucose. Necropsy was done twenty-four hours after death. Histological examination of the pancreas revealed that some of the cells in the islets of Langerhans had been destroyed or damaged and that regeneration was occurring. The nuclear changes included pyknosis, hyperchromatism, giant nuclei, *mitoses*, and multinucleation—none of which can be attributed to autolysis—as well as bizarre nuclei, karyolysis, and fragmentation.

1. Blackburn, E. K., King, G. M. *J. Fac. Radiol., Lond.* 1954, 6, 96.

1. Baar, S., Bull, J. P. *Lancet*, 1952, i, 978.

Cytoplasmic changes include partial or total hyaline degeneration as well as swelling and disintegration. There was also histological evidence of adrenocortical hyperactivity—namely, almost complete loss of cortical lipoid and splenic eosinopenia.[2]

These findings indicate that the diabetic state of burns is at least partly due to early pancreatic damage. The presence of mitotic figures in the islet cells suggests that the damage may be reversible. This would support Dr. Butterfield's experience that the diabetic state after burning is often temporary.

Pathology Department,
Accident Hospital and M.R.C.
Burns Research Unit, Birmingham. S. SEVITT.

PERFORATED PEPTIC ULCERS

SIR,—Mr. Kirkman states (Feb. 26) that 1 death which I included in the simple-suture group (table II) should be included in the non-operative group because the case was treated conservatively. But this patient was treated conservatively not from choice but because she was considered to be too ill for operation. In other words, when a particular method is being used, all cases admitted in that series must be considered as of that series.

He also states that 5 of the 65 cases treated conservatively were unproved and should be discarded.

While I cannot agree with this—for these were typical cases, and an absence of free gas, shoulder pain, and subsequent barium meal does not exclude a perforated ulcer—their exclusion only alters the percentages to 5% of deaths in the conservative group as against 4·4% in the simple-suture group—an insignificant difference in a small series.

Arising from this, I would agree with him that if only one method is to be used in all cases, then simple suture is the safest. I feel, however, that each case of perforated ulcer should be considered on its merits and not forced into a standard mould of treatment.

General Infirmary, Leeds. H. D. MOORE.

SIR,—Mr. Kirkman has interpreted my letter of Feb. 5 in a way I had not intended. I was not expressing an opinion as to the relative merits of operative and conservative treatment of perforations in general, but merely questioning the validity of Mr. Moore's statement vis-à-vis his own series. Mr. Moore has already cleared up that point (Feb. 12), and I would wholeheartedly agree with both Mr. Moore and Mr. Kirkman that operation is the treatment of choice.

Department of Surgery,
Medical School,
Dundee. JOHN GRIEVE.

CANCER CLUES

SIR,—Your annotation of Feb. 19 prompts me to write to draw attention to our pathetic lack of knowledge about cancer ætiology and ecology. The ignorance of the ecological circumstances is due less to the difficulty of approach to the problem than to an unjustifiable pessimism about the possibility of finding out new facts about cancer ætiology anywhere except in the laboratory.

There is an urgent need for field teams, possibly organised by W.H.O., to describe and calibrate the environments (including, in this context, diet) in which different sorts of growth are found often or rarely. Such teams would need to include (among others) personnel with special training in morbid anatomy, statistics, sociology, dietetic surveying, and public-health administration. The teams would work with the government health officials of the countries or areas to be studied, and local agencies would be used to help with the surveys. Certain of the personnel need not be highly trained, and the work would provide an excellent opportunity to medical students who wished to do some field research in an unfamiliar country. When these workers returned to their own country they would have received a valuable stimulus to their curiosity and to their powers of systematic observation and of formulating and testing hypotheses. The results of standardised investigations of the habits and environment of different areas, and, the varying incidence of different types of growth in them, would be correlated at a central headquarters establishment.

Another neglected approach to the problem of cancer causation is the use of the questionnaire for a controlled series of patients and normal people. This method, which uncovered the association between smoking and lung cancer, should be in the widest use at present for testing hypotheses on ætiology which clinical experience may suggest.

It has surprised me to learn that detailed mapping of cancer incidence in this country has hardly begun, and the pioneer work of Dr. Percy Stocks for the British Empire Cancer Campaign should be an example to every regional hospital board or area health authority. The need today is for as many people as possible to start "guessing and trying," or, to put it differently, to start making hypotheses about environmental factors in ætiology and then to test these statistically. Regional boards could make a useful investment by each appointing a statistician for research into cancer ætiology, to work with medical officers of health and other doctors in the region.

The causation of cancer is likely to remain a mystery unless more people learn to ask simple questions and to seek answers outside the laboratory.

Mass X-Ray Service for
South-West London,
Grove Hospital, S.W.17. F. A. NASH.

SANATORIA

SIR,—Dr. Stradling's suggestion (Feb. 19) that the trend in the treatment of tuberculosis is toward "clinic management" gave rise to four most interesting letters last week.

While agreeing with many of the points in these four letters, and also the restrained wisdom of Mr. Temple (Jan. 8), I think that Dr. Stradling is right. Granted that remoteness is only one factor leading to the closure of the Trudeau Sanatorium, it is, nevertheless, a fact that the Royal National Sanatorium at Ventnor, a fully equipped chest hospital in every way, has for some months had empty beds, which can be accounted for only by the inaccessibility of the Isle of Wight. Nowadays many patients are not willing to take their treatment a long way from home.

Formerly local health authorities made provision for sanatorium treatment and patients could either take it, despite distance, or leave it. From data which I published in 1947 referring to the previous thirty years in a county borough, it appeared that 52% (367 out of 706) sputum-positive stage-I or stage-II cases in that town never had sanatorium treatment. Among the various possible reasons for this, one was that the available sanatorium was 90 miles away. It is the local chest physician who has to persuade the patient to go to a perhaps distant sanatorium and to answer the anxious pertinent questions as to the necessity for this.

I cannot agree that a sanatorium doctor looking after a patient for a year or so necessarily gets to know him better than the diligent clinic physician, who should become the guide, counsellor, and friend to the patient and his family for many years.

I agree with Dr. Stradling that antibiotics have now become a more important item in treatment than strict bed rest. (How many sanatoria still impose "absolute rest"?) Few of us have yet adopted ambulant drug treatment as extensively as Dr. Pritchard (Feb. 5), but it seems entirely reasonable that carefully chosen cases be treated in this way.

Nowadays at least 50% of patients with pulmonary tuberculosis whose disease needs active treatment require, essentially, a period of antibiotic drugs and withdrawal from their ordinary mode of life, with later consideration of major surgery. If their home conditions are good many of these people welcome the continuation of their

2. Sevitt, S. *J. Path. Bact.* (in the press).

medical care at home after an initial period in hospital to teach them about their disease—especially if their illness is likely to last over a year and culminate in surgery. Even in the best sanatoria it is not easy to keep morale high for twelve months or more. Many cases can be supervised in this way under "clinic management" provided that the clinic is fully equipped and well staffed. There is nothing new or revolutionary about having tuberculosis wards in local general hospitals. The London County Council and other local authorities were doing it for years before the National Health Service came along.

The bare economics of the hospital service will not enable us to dispense with our biggest and best-equipped chest hospitals. Some of these have, for historical reasons, developed in rustic parts of the countryside, but they are first-rate medical and surgical centres and for a long time yet there will be tuberculosis patients in need of them. There are other institutions, though, which are merely country convalescent homes capable of caring for coughing consumptives. As the need for tuberculosis beds diminishes some of these must be the ones to close.

Certainly the chest physician in the clinic, busy with diagnostic problems and other diseases to treat, as well as having many opportunities for following the fascinating epidemiology of tuberculosis and its prevention, has plenty to do besides managing the inpatient and home treatment of the disease. But it seems certain that better-staffed chest clinics and still closer integration with local hospitals is the way in which the chest service in this country will develop.

Bournemouth Chest Clinic. W. H. TATTERSALL.

HYDROCORTISONE OINTMENT IN DERMATOSES

SIR,—Hydrocortisone ointment has been reported from the U.S.A. to be beneficial in pruritus ani [1] and in various dermatoses.[2] Small series of successfully treated cases have also been reported from Europe.[3 4] Only two such accounts have so far been published in Britain.[5 6]

In the past four months I have used this ointment in selected skin diseases at the dermatological clinics in Ayrshire. 42 cases of selected dermatoses in adults have been treated and followed for four months. The ointments used were 2·5% and 1% hydrocortisone acetate in a water-miscible, non-greasy, propylene and polyethylene-glycol base, supplied by Roussel Laboratories Ltd. No control ointments were used, since 40 of the 42 cases had previously been treated unsuccessfully with various other ointments. The results are shown in the accompanying table.

RESULTS IN 42 CASES

Disorder	No. of cases	Results			
		Excellent	Very good	Improved	Worse
Pruritus :					
Anal	15	10	4	..	1
Scrotal	3	3	..	..	..
Vulval	4	3	..	1	..
Lichen simplex ..	10	6	2	1	1
Atopic dermatitis ..	6	..	2	3	1
Nummular eczema	4	2	1	1	..

Pruritus

In the 22 cases of pruritus local causes of itching were excluded before treatment was started. Only 1 patient had not previously been treated; and the disorder had been present in these cases for from five months to fifteen years. Each patient was instructed at the start of treatment to apply the ointment with gentle massage to the affected areas, twice daily. On starting, one 5-g. tube was given, to last one week; and this was continued for three weeks. Subsequently one 5-g. tube of ointment was given every two weeks or as required.

The response was excellent in 16 cases. In these 16 the 2·5% ointment was used for six weeks and then stopped completely or replaced by 1% ointment, which was applied only every two or three days. 4 patients have been off treatment for eight weeks without recurrence of itching. A very good result was noted in another 4 cases. In this group itching ceased, but the 2·5% ointment still has to be used for continued relief. In both of these groups the response was rapid, and itching ceased within seven days of starting the ointment. In 1 patient with pruritus vulvæ initial improvement was very good but itching returned within four weeks; and although it is less intense it has persisted. In the 1 patient who became worse pruritus ani had been present for ten years and the perianal skin was sodden and macerated. After four days of treatment the skin became infected and deep-seated pustules formed.

Lichen Simplex

10 cases of lichen simplex chronicus were treated. The disorder had been present for from six months to four years. The result was excellent in 6 cases and very good in 2. Another patient, although benefiting from the ointment, was not entirely freed of itching and required daily treatment with 2·5% ointment. The last patient in this group became worse, and within ten days the area on the back of the neck was impetiginised. In 3 of the 6 patients showing excellent results treatment has been suspended for eight weeks with no recurrence of itching, while the other 3 cases require intermittent treatment with a 1% ointment.

Atopic Dermatitis

6 cases of atopic dermatitis were treated. All were of long duration and wide extent. The skin cleared completely in no case; but in 2 the results were very good, with abatement of lichenification, excoriation, and itching; daily application of 2·5% ointment in 1 case, and of 1% ointment in the other, was necessary to prevent recurrence. In 3 cases the condition of the affected skin improved, but the skin remained slightly lichenified. In the 6th case folliculitis developed on the wrists and antecubital fossæ after eight days' treatment.

Nummular Eczema

4 cases of widespread nummular eczema of at least six months' duration were treated. The results were excellent in 2 cases, with rapid disappearance of the lesions and no recurrence six and eight weeks after stopping the ointment. Another patient showed complete clearing, but relapsed two weeks after withdrawal of the ointment, and now requires regular application of the ointment. The last case, although much improved, did not clear completely; daily application of ointment was necessary, and treatment has now been abandoned in this case.

In this small series of 42 cases of selected dermatoses, the results were excellent or very good in 33; and 31 of the 33 patients had been previously treated with little success.

For rapid initial improvement, a 2·5% concentration of hydrocortisone acetate is the more effective, although a 1% concentration often suffices to maintain subjective and objective improvement. The ointment is easy to apply. It does not sting or burn and does not stain clothing or bed-linen. The index of skin sensitisation to hydrocortisone acetate is low, and no instance of sensitisation was found in this series. If sensitisation does appear, the base rather than the hydrocortisone should be suspected.

Smith [7] showed that there was lack of experimental evidence that hydrocortisone acetate applied topically was absorbed in significant amounts. Sulzberger and Baer [8] state that in many hundreds of cases there has been no systemic upset from local application of hydrocortisone even after prolonged use over wide areas. It would appear, therefore, that hydrocortisone ointment

1. Alexander, R. M., Manheim, S. D. *J. invest. Derm.* 1953, **21**, 223.
2. Sulzberger, M. B., Witten, V. H., Smith, C. C. *J. Amer. med. Ass.* 1953, **151**, 468.
3. Sidi, E., Bourgeois-Gavardin, J., Plas, G. *Pr. méd.* 1953, **61**, 992.
4. Heilesen, B., Kristjansen, A., Reymann, F. *Arch. Derm. Syph., Chicago*, 1954, **70**, 360.
5. Malkinson, F. D., Wells, G. C. *Brit. J. Derm.* 1954, **66**, 300.
6. Church, R. *Brit. med. J.* Feb. 26, 1955, p. 517.
7. Smith, C. C. *Arch. Derm. Syph., Chicago*, 1953, **68**, 50.
8. Sulzberger, M. B., Baer, R. L. *In* Year Book of Dermatology and Syphilology, 1953–1954. Chicago, 1954.

is relatively safe. No side-effects were observed in any of these 42 patients.

No distant effect of the hydrocortisone acetate was observed in this series, although Sidi et al.[3] found that areas removed from those treated with ointment responded to the hydrocortisone.

The disadvantages of treatment with hydrocortisone-acetate ointment are: (1) lessening of the resistance of the tissues to infection; and (2) the tendency of the lesions, in many cases, to relapse after treatment has been discontinued. Prolonged use of the ointment may avert these relapses, and a combinaton of the hydrocortisone with an antibiotic may control infection.

The relatively poor results in atopic dermatitis and nummular eczema, compared with the results obtained by Sulzberger et al.[2] in these diseases, may be accounted for by the smallness of the supply of hydrocortisone at my disposal.

Heathfield Hospital, Ayr County Area. THOMAS COCHRANE Consultant dermatologist.

MOLLUSCUM PSEUDOCARCINOMATOSUM

SIR,—The interesting article by Dr. Martin Beare (Jan. 22) and the letter by Dr. Church (Feb. 26) prompt me to report the only case which I have seen in which the lesion recurred after treatment but subsequently disappeared spontaneously.

A man, aged 33, was seen on March 6, 1953, with a typical molluscum on the right cheek. It had first appeared two or three weeks earlier at a point where he had cut himself shaving. It had grown rapidly and had attained a diameter of 1·4 cm., and it projected 4 mm. from the surface of the surrounding skin. After a formal biopsy, including both edges of the lesion, it was treated by simple curettage followed by light cauterisation, sufficient only to produce hæmostasis. Histological examination confirmed the diagnosis of molluscum pseudocarcinomatosum, but on March 27, 1953, the lesion had recurred and measured 1·2 × 1·3 cm. No further treatment was given and on May 8, 1953, the area was flat and dry. When the patient was last seen, on July 3, 1953, there was merely the depressed, rather irregular, scar such as one usually sees.

One is tempted to wonder whether spontaneous recovery might have occurred if no further treatment had been given in the cases reported by Dr. Beare and Dr. Church. These recurrences may perhaps be explained on the basis of infection. With most of these lesions, as with warts, simple removal is usually enough to stimulate the natural defence mechanism of the skin. The cases which have recurred were all treated relatively soon after they appeared, possibly before sufficient immunity had developed.

Finally, I should like to support Dr. Beare's plea that these lesions should be distinguished from squamous epithelioma and that the patients should be spared from unnecessary heavy irradiation.

Exeter. J. R. SIMPSON.

TREATMENT OF STEATORRHŒA

SIR,—Since patients with fatty stools often have abdominal discomfort, simple alterations in régime directed to reducing the fat in their stools are worth trial.

I have under my care a man, now aged 20, who, following a road accident, had the greater part of his small intestine removed at operation; only the duodenum and some 18 inches of jejunum remains. There was difficulty in maintaining his nutrition, and his stools contained a gross excess of fat. It was pointed out to me by Dr. J. N. Hunt that hydrolysis of butter-fat yields a higher proportion of short-chain fatty acids than other culinary fats. The short-chain fatty acids are more water-soluble than the long-chain fatty acids, and it may be presumed that they are more readily absorbed from the small intestine. The patient was therefore given a diet containing generous quantities of butter, but all other forms of fat were avoided. The patient has now been under observation for two years; his general nutrition remains excellent, and he has shown neither decalcification of the bones nor anæmia. He has had no other treatment. It is hoped later to publish a detailed surgical and metabolic study of this patient.

The apparent success of this diet led me to try it in two cases of idiopathic steatorrhœa, with the most satisfactory results; in a patient with fatty stools due to pancreatic obstruction from a carcinoma there was a little temporary benefit.

These observations are few and incomplete, but the diet is a simple one, and others may care to try it in patients with this distressing condition.

London, W.1. W. N. MANN.

BEHÇET'S SYNDROME

SIR,—Mr. Phillips and Mr. Scott (Feb. 19) do not mention ethisterone or progesterone amongst the many remedies they have tried for the relief of Behçet's syndrome. I have had good results in a case with premenstrually exacerbated oral ulceration, associated with rheumatoid arthritis, by giving 20 mg. ethisterone three times a day, during the fortnight preceding menstruation. The vulva and eyes were unaffected in this case, but I do not doubt that it represented this syndrome in an incomplete form. I suggest that this drug, which is readily available and cheaper than cortisone and corticotrophin, be tried in cases exhibiting premenstrual exacerbation, since all other drugs appear to have been without effect.

Dulwich Hospital, London, S.E.22. BERNARD FREEDMAN.

SIR,—I was interested in the article by Mr. Phillips and Mr. Scott. There is no doubt that the syndrome is commonly present in partial form—mouth ulcers only. In the complete syndrome a history of previous mouth ulcers is not uncommon. Only the new development in the eye or on the genitals brings the patient to the doctor.

Some of these patients get acute dyspepsia at the time of the mouth ulcers, but out of proportion to the dysphagia due to a sore mouth. It would be interesting to know whether acute gastric ulceration has in fact been seen. Some time ago I saw a man who had bouts of acute dyspepsia, lasting two to three weeks, accompanied by mouth ulcers—often quite trivial. This may not be uncommon. I believe one paper on mouth ulcers gave as a title yet one more name for this condition —"dyspeptic ulcers."

The genital lesions can be severe and can, as Mr. Phillips and Mr. Scott mention, occur high in the vagina. One patient I saw had been off work for a year and had been unable to walk for months.

Chester. G. P. B. WHITWELL.

HYDROCORTISONE IN LESIONS OF SOFT TISSUE

SIR,—Several points in last week's paper by Dr. Crisp and Dr. Kendall invite comment.

The authors claim in their summary to have treated "209 cases of soft tissue lesions . . . by local injection of hydrocortisone." In actual fact these cases were treated by injection of 2–5 ml. of a "lytic cocktail" consisting of hydrocortisone, 2% procaine hydrochloride, and hyaluronidase. Many of the conditions listed have been treated by others with considerable success by injections of either hyaluronidase, procaine hydrochloride, or a combination of both. It would therefore seem very unwise to ascribe the dramatic results of their injection treatment to the effects of hydrocortisone alone.

There do not appear to have been any controls in their series of cases, and in only 4 instances are details of treatment and the clinical response given. The true value of hydrocortisone could have been easily determined if these 4 patients had been treated by injection locally of other solutions such as procaine hydrochloride, and then at a later date given an injection of hydrocortisone.

Certain conditions are listed which could not be reasonably expected to respond to injection therapy, and good results are claimed. Trigger-finger, for instance, is generally accepted to be a condition in which the disordered finger movements are due to a very definite mechanical defect for which the only

satisfactory treatment is surgical exploration and release of the obstructing factor. It is conceivable that simple tenosynovitis, especially of the acute variety, might be improved by a local injection of hydrocortisone with or without the addition of hyaluronidase and procaine; but this, I submit, is not the condition known as trigger-finger.

The authors claim that of 6 patients with Dupuytren's contracture treated in the early stages 4 could fully extend the affected finger after the injection of hydrocortisone. No details are given, but it would be very interesting to know which part of the contracted palmar fascia was injected and also what were the symptoms for which the patients sought relief in the first place. The natural history of Dupuytren's contracture is such that it would be unwise to make any conclusions after a follow-up interval of only two months. Some cases lie dormant for many months or years before showing progression; others can be kept in check for many months or years by intermittent splintage at night; some progress so rapidly as to mimic a malignant-disease process. It would be interesting to know to which category those cases belonged that were treated by injection of hydrocortisone.

The enthusiasm of Dr. Crisp and Dr. Kendall commands respect, but the evidence given in its present form does not, in my opinion, justify the widespread use of an expensive drug about whose effects we know surprisingly little.

Plastic Surgery Centre,
St. Lawrence Hospital,
Chepstow, Mon. MICHAEL N. TEMPEST.

ANTITUBERCULOUS ACTION OF 1,3,4-OXDIAZOLONES

SIR,—As Barry and Conalty [1] have pointed out, isoniazid, and derivatives of isoniazid such as *o*-hydroxybenzol isonicotinyl hydrazone ('Salizid'), readily permit the growth of resistant variants of H37Rv when the organism is grown in vitro in the presence of concentrations just insufficient to restrict growth. Knox et al.,[2] Barnett et al.,[3] and Barry et al.[4] have all shown how readily strains of *Mycobacterium tuberculosis* resistant to isoniazid can be produced in vitro.

In the course of work on the new 2-pyridyl-1,3,4-oxdiazolone-(5) reported by Wilder Smith,[5] we investigated the production of variants of H37Rv resistant in vitro to isoniazid and to the oxdiazolones. We found that H37Rv grown in the presence of 2-pyridyl-1,3,4-oxdiazolone-(5), or its *p*-aminosalicylate, does not develop any signs of resistance even after six months' subculturing at fortnightly intervals. In parallel control experiments with isoniazid, resistance was produced comparatively rapidly.

Liquid Dubos media were used without the addition of 'Tween' or oleic acid for all cultures except the first one. The tuberculostatics were added to give concentrations of 0·001, 0·01, 0·1, 1·0, 10·0, 50·0, and 100 μg. per ml. The first subculture was inoculated with one drop from a Pasteur pipette taken from a fourteen-day Dubos Tween culture (H37Rv). All subcultures were made after twelve days' incubation, and inoculated into fresh media containing the tuberculostatic in question. The material for subculture was taken from the last tube in which unrestricted growth occurred. All tests were carried out in duplicate: the first series of tests covered 9 subcultures and the second 6 subcultures.

Both series showed clearly that resistance is rapidly produced to isoniazid. The sensitivity of the original culture to isoniazid was 0·001 μg. per ml. After the seventh subculture the sensitivity was 0·1 μg. per ml. and after the ninth subculture 50·0 μg. per ml. The sensitivity of H37Rv against 2-pyridyl-(4)-1,3,4-oxdiazolone-(5) and against its *p*-aminosalicylate, however, remained practically constant at 0·1–1·0 μg. per ml., up to the sixth and ninth subcultures. These results have been confirmed by others interested in the pyridyl-oxdiazolones.

Not only was it impossible to produce resistance to the pyridyl-oxdiazolones by subculturing in vitro, but it was also found that these substances showed activity against all the resistant strains of *M. tuberculosis* which we investigated.

Clinical trials of the new compounds were carried out over six months on 70 patients, a large number of whom were no longer responding to *p*-aminosalicylic acid, streptomycin, isoniazid, and in some cases terramycin. A definite response was observed in a number of cases, which tends to confirm the in-vitro observations.

Cantonal General Hospital,
Lucerne, Switzerland. H. BRODHAGE.

1. Barry, V. C., Conalty, M. L. *Lancet*, 1954, ii, 494.
2. Knox, R., King, M. B., Woodroffe, R. C. *Ibid*, 1952, ii, 854.
3. Barnett, M., Bushby, S. R. M., Mitchison, D. A. *Ibid*, 1953, i, 314.
4. Barry, V. C., Conalty, M. L., Gaffney, E. *Ibid*, p. 978.
5. Wilder Smith, A. E. *Science*, 1954, **119**, 514.

THE PATHOLOGY OF REHABILITATION

SIR,—Dr. Fowler is to be congratulated on highlighting, in his article last week, problems with which many of us have been grappling for some time. His findings bear out the impressions which have been formed in the course of daily work.

This article is a strong argument for extension of the occupational health services. The presence inside an industry, as part of that industry, of a doctor who has the trust of management and men is the best way of ensuring that employees are fitted in to tasks appropriate to their abilities and that the progression of recovery through work is carefully followed.

There are two other small points I should like to make.

Dr. Fowler says that the dangers of the employment of epileptics have been exaggerated. If he means the physical dangers no-one will argue, but it is a fact that recent court decisions have made many employers wary of accepting an increased responsibility, which has been clearly laid at their door in the event of some unforeseen accident.

The second point concerns "the neurotic element in physical disease." This is hard to define and any classification is bound to be arbitrary, but it is the deciding factor in nearly every case and one cannot help feeling that the medical profession is not blameless. The "light work" or "no night shift" certificate which gives no indication of how long the restriction is to be imposed has proved as disabling as any physical syndrome. It disheartens patient and employer alike and should be most sparingly used.

Many industries re-employ their own handicapped very successfully without elabortae facilities, and a good occupational health service should make this a prime duty.

K. P. DUNCAN
Chief Medical Officer,
South Western Gas Board.
Bath.

Parliament

QUESTION TIME

Recruitment of Nurses

Mr. V. J. COLLINS asked the Minister of Health in how many regions the recruitment of nurses had been suspended or reduced because of the instruction to hospital management committees that recruitment of nursing staff up to approved establishment could only be made on condition that the salaries of staff so recruited could be met from the approved estimates.—Mr. IAIN MACLEOD replied: Full information is not available, but it is obvious that improvements and developments, including increases in staff, can only be made if the cost can be met within the allocations. One of the main items in the new moneys for which the different authorities have asked is, of course, their expectation of increasing the numbers of staff available to them.

Mr. R. W. SORENSEN asked whether the Ministry could try to transfer some nurses from the overstaffed hospitals to some understaffed hospitals.—Miss PATRICIA HORNSBY-SMITH: A certain amount has been done by the standstill of establishments with just that result. There is an improvement, but not in the mental hospitals. That method has helped the other hospitals. It is fair to say that the staffing figures for the general and teaching hospitals are not wholly comparable with the others.

Trainee Nurses

Dr. BARNETT STROSS asked the Minister whether he was aware that at some hospitals trainee nurses were engaged for long periods on night duty; and what were the exact recom-

mendations laid down by his regulations on this point.—Miss HORNSBY-SMITH replied: The Nurses Salaries Committee recommended that student nurses should not be employed continuously on night duty for longer than three months. The Minister is aware that it may not always be possible to observe this recommendation. There are no other requirements on the subject.

Replying to a further question Miss HORNSBY-SMITH said that the Minister had made no regulation on the time allocated for student nurses to attend lectures. He thought it best to leave the arrangements to the discretion of hospital management committees and boards of governors; but whenever possible student nurses should not, in his view, be expected to attend lectures in their free time.

Mercury in Teething-powders

Replying to a question Miss HORNSBY-SMITH said the Minister had considered the recent case, to which his attention was drawn, of a baby's death from mercury poisoning. While the Minister was advised that mercurial preparations had a proper place in medical treatment, his medical officers had already suggested to medical officers of health that powders containing mercury should be issued from child-welfare clinics only on medical advice and with precise instructions. He would consider further whether to suggest that these preparations should cease to be available at clinics at all.

Mr. S. T. SWINGLER: In addition to the action proposed, does the Minister not agree that some general public warning might be sent out by the Minister's medical advisers in view of the public concern created by recent inquests?—Miss HORNSBY-SMITH: I think that the general publicity, particularly in professional journals, and advice given by the Minister's medical officers of health has made this clear. I should like to make it plain that if they were not given by clinics that would not interfere with the right of a doctor to prescribe a preparation in which mercury was included.

Tuberculosis Treatment in Swiss Sanatoria

Replying to a question Mr. MACLEOD said that 140 patients from England and Wales were now being treated for tuberculosis in Swiss sanatoria under the National Health Service.

Registration of Opticians

Replying to a question Miss HORNSBY-SMITH said that the Minister could hold out no hope of introducing legislation for the registration of ophthalmic and dispensing opticians at present.

Food-poisoning

Mr. SOMERVILLE HASTINGS asked the Minister of Health how many food-poisoning incidents due to processed and made-up meats were recorded in 1950, 1951, 1952, and 1953; and what percentage of the total incidents resulted from such causes in each of the four years.—Mr. MACLEOD replied: The following table gives the number and percentage of recorded outbreaks of food-poisoning—i.e., instances of two or more related cases, but excluding sporadic cases, where processed and made-up meats have been identified as the vehicle of infection:

Year	Number of outbreaks attributed to processed and made-up meats	% of total outbreaks (all foods) where the vehicle of infection has been identified
1950	202	46
1951	114	49
1952	144	53
1953	164	53

Pharmaceutical Imports

Replying to a question Mr. PETER THORNEYCROFT, President of the Board of Trade, said he was aware of the heavy increase in the value of imports of medicinal and pharmaceutical products during 1954, as compared with 1953. The extent to which this increase was due to increased imports from the United States of America was nearly 60%. He imagined that the imports had increased because some of the new drugs had been developed and produced in the United States, and he thought it was right that people in the United Kingdom should have access to them. He was anxious to conserve our dollar resources, but he thought that the Government should hesitate before restricting the import of up-to-date drugs for healing sickness.

Obituary

EDWARD VIPONT BROWN

M.D. Lond.

Dr. Vipont Brown, who died on Feb. 26 at the age of 92, had practised in Manchester for nearly sixty years.

He was born in 1863 of Quaker stock at North Shields, where his father was a doctor. At Bootham School, York, he broke the record for the mile, and began an interest in football and cycling which included a journey from York to Edinburgh on a penny-farthing. He trained at St. Bartholomew's Hospital at a time when gynæcologists called in a surgeon to operate on their cases, and where he was "taught to laugh to scorn the teaching of Lister who had recently come to King's College Hospital to convince the London surgeons of the value of his methods." He was even upbraided when he cut his hospital lectures to listen to those given by Lister. He qualified in 1886.

In 1894 he went to Manchester "just for a fortnight to help a friend," and he stayed in practice there for over half a century, taking his M.D. in 1901. In his early days he would return from his rounds by horse tram, and he was probably the last doctor in Manchester to wear the traditional top hat and frock coat. Long before he retired he was one of the most respected and best-liked general practitioners in the city. He was a family doctor in the widest sense of the word, and made every effort to keep up to date in his methods and treatment, attending regularly postgraduate lectures and demonstrations until he was well over 70. He did much pioneer work in the medical services of the city, especially in connection with district nursing.

Deeply religious, he was a leader of the Quaker community, writing articles on Quaker Aspects of Truth, temperance, and, for the Fabian Society in 1910, a pamphlet on *The Medical Profession, its present work and its future*. He was a lifelong and fearless campaigner for peace. He retired from practice on his 83rd birthday and left Manchester with his wife to live with their daughter at Yealand Conyers. There last month they celebrated their diamond wedding. The practice continues in the hands of his son.

Dr. O. T. AVERY

R. M. H., a former resident physician to Avery's respiratory service in the Hospital of the Rockefeller Institute, writes:

"My introduction to the work of the service was a week in conclave with 'Fes' when he expounded to me his whole concept of pneumococcal pneumonia and the immunity of the subject, starting from the point when he and 'Do' (Dochez) decided to 'take the pants off' the pneumococcus, going systematically through the experimental work of Heidelberger, Goebbel, Dubos, Francis Horsfall, and McLeod. His explanation had the fantasy of J. M. Barrie—whom he was not unlike, but he had no moustache—and his tenderness and sense of feeling were manifest by the fact that he would never visit any patient. Yet every detail of the patients under our care was known to him, and during the time I was there not one with pneumococcal pneumonia was lost. We were then using antipneumococcal serum, and the sulphonamide era was just dawning.

"Lunch with Fes in the institute was an exciting and exhilarating experience. It often lasted until well after three, during which time he would unravel his theories on immunochemistry. Experimentally, he demanded the highest standards and everything had to be done by oneself, a principle he shared with Landsteiner, though as men they were poles apart. Hurricane 'Edna' kept me from seeing him last September; but his delightfully whimsical temperament, his puckishness, his sincerity, and his profound philosophy will remain as bright a light as the torch held by Liberty at the entrance to New York harbour."

Births, Marriages, and Deaths

MARRIAGES

CASSON—SEMMEL.—On March 5, in London, Dr. Frederick Ronald Christopher Casson to Mrs. Luise Semmel.

MURPHY—THOMPSON.—On Feb. 19, Grahame Edward Murphy, M.B., M.SC., F.R.C.S., to Isabelle M. Thompson, M.B., L.D.S.

Notes and News

NEW END THYROID CLINIC AND DEPARTMENT OF ENDOCRINOLOGY

ON March 2 the Duke of Edinburgh formally opened this department at New End Hospital. The chair was taken by Mr. John Fremantle, chairman of the North West Metropolitan Regional Hospital Board, which first began the extension of the department by setting up a radio-isotope laboratory two years ago. Among those present were Mr. Iain Macleod, the Minister of Health, and Sir Thomas Dunhill, founder of the London County Council Thyroid Clinic from which the new department has developed. The Duke of Edinburgh was conducted through the new premises, housed in the shell of the old maternity unit, by Mr. J. E. Piercy, the surgeon-superintendent of the hospital, and Dr. Raymond Greene, senior physician to the hospital and the originator of the extension plan. The new department has 26 beds, a new biochemical laboratory, an extended and improved radio-isotope laboratory, an outpatient department, and a new operating-theatre, all in convenient juxtaposition. The transmutation of the thyroid clinic into a complete endocrinological research unit has been made possible by a gift from King Edward's Hospital Fund. Messrs. Organon are giving an annual subsidy to the research work of the department.

CONVERSION OF PRINCESS LOUISE HOSPITAL

Mr. Iain Macleod, the Minister of Health, announced in the House of Commons on March 7 that no final decision had yet been taken regarding the proposed conversion of Princess Louise (Kensington) Hospital to adult use.[1] The proposal, made originally by the coördinating subcommittee of St. Mary's Hospital board of governors, was endorsed by the board on Feb. 24. Two days earlier the Kensington and Hammersmith division of the British Medical Association had unanimously adopted the following resolution:

"Being satisfied as to the continuing needs of sick children in the area, the medical practitioners of the Kensington and Hammersmith district ask the Minister of Health to give serious consideration to the necessity for the Princess Louise Hospital to continue as a children's hospital serving the needs of the area. We would further like to impress on the Minister that these needs should take priority over the teaching requirements of St. Mary's Hospital."

This resolution was endorsed by the medical staff of Princess Louise Hospital, who drew attention to similar resolutions passed by the council of the Royal Borough of Kensington and by Hammersmith borough council. Earlier, the association of friends of the hospital had written to the Minister pointing out that the hospital, which had served the borough of Kensington for 115 years, was the only children's hospital in a very densely populated area.[2]

GUY'S HOSPITAL DENTAL SCHOOL

THE annual clinical meeting of the school, on March 5, once more showed the growing use of visual aids to teaching and of colour cinematography in recording the progress of orthodontic patients. Mr. E. Gwynne Evans's record film, assembled from shots taken during the past five years, made clear the importance of the relation between orofacial muscular behaviour and malocclusion. Electromyography is now being used to study both normal and abnormal muscular patterns.

Dr. D. J. Anderson demonstrated his method for determining the pressure developed between the teeth during chewing; he uses a small resistance strain-gauge held in the tooth by a specially designed inlay. Preliminary calculations suggest that a normal tooth is subjected to a thrust of some 15 kg. during mastication; the thrust on an artificial tooth is only about 4 kg. It is not thought that denture-wearers chew their food less thoroughly, but that they have to make more jaw movements to achieve the same result. Mr. A. C. Kerr has devised an apparatus for collecting and measuring samples of saliva by inserting a fine 'Polythene' cannula in the duct of the parotid gland.

Prof. A. B. Macgregor, in his lecture on Antiseptics and Antibiotics, affirmed that only three antiseptics are of use in the mouth—tincture of iodine, proflavine, and cetrimide. He considered that the sulphonamides, despite their disadvantages, should be used more in dental practice: they are cheap, can be administered orally, and are effective against most pyogenic organisms. Because of its low toxicity and because it can be injected locally, penicillin is still the most valuable of the antibiotics, despite the increase in drug-sensitive patients and in resistant strains of bacteria. Before a dental operation, for instance, a single troche of penicillin will, in 15–20 minutes, reduce the bacterial content of the mouth to about a fifth of its previous level. The newer antibiotics, with the possible exception of oxytetracycline, are, in his view, too toxic for routine use.

1. See *Lancet*, Jan. 29, 1955, p. 241.
2. *Kensington News*, Feb. 25, 1955.

HOSPITAL COSTS IN SCOTLAND

IN Scotland during the year ended March 31, 1954,[1] the average cost of maintaining a patient in hospital, excluding specialists' salaries and overhead charges for empty beds, was £8 4*s*. 3*d*. per week, distributed as follows:

	£	*s*.	*d*.
Patients' food, laundry, and clothing	1	5	10
Drugs, dressings, and surgical appliances		10	8
Staff salaries and wages, food, laundry, &c.	4	3	0
Domestic repairs, heat, light, power, &c.	1	6	2
Maintenance of buildings and other overheads		11	2
Board of management administration		7	5

The average weekly costs of maintaining and treating a patient in the different types of hospitals for the two years 1952–53 and 1953–54 were:

	1952–53 £	*s*.	*d*.	*1953–54* £	*s*.	*d*.
General hospitals:						
1–50 beds	9	10	2	9	12	6
51–300 beds	10	6	3	10	11	9
Over 300 beds	11	10	3	11	5	5
Teaching	11	3	1	12	0	9
Maternity	15	7	3	15	8	10
Convalescent	5	2	10	5	9	0
Sanatoria	8	11	7	8	19	2
Infectious diseases	9	18	1	10	13	11
Mental	4	14	2	4	17	2
Mental deficiency	4	7	7	4	8	0

The average cost of treating an outpatient was 4*s*. 10*d*. per attendance. Attendances totalled 5,368,182.

HOSPITAL PHARMACEUTICAL SERVICES

IN November, 1951, a subcommittee of the standing Pharmaceutical Advisory Committee, under the chairmanship of Sir Hugh Linstead, set out "to review the arrangements for the provision of pharmaceutical services in hospitals and to advise on the most efficient and economical organisation of those services." Their findings were summarised in the report of the Central Health Services Council for 1953,[2] and are now published in full.[3] The Ministry of Health, drawing the attention of hospital authorities to those of the subcommittee's recommendations which it has accepted, suggests[4]:

(1) That extraneous duties—such as the care and issue of medical and surgical equipment or the operation of a central syringe service—should be undertaken by pharmaceutical departments only when there are strong reasons for not making other arrangements.

(2) That each pharmaceutical department should be under the charge of a qualified pharmacist; if a full-time pharmacist is not employed, then one from the hospital group should be made responsible for supervising the pharmaceutical service.

(3) That regional boards and hospital management committees should investigate the possible advantages of organising their pharmaceutical services on a group basis, or even on one involving several groups.

(4) That each regional board should consider setting up a pharmaceutical committee to advise them on matters of regional interest and to suggest ways of making the pharmaceutical services more efficient and economical.

(5) That, in view of the present shortage of pharmacists, committees and boards should ensure that pharmacists are employed only in positions which justify their training and skill, and which involve no duties that could be left to others less well qualified.

(6) That manufacture of pharmaceutical preparations—whether by individual hospitals or by hospital groups—should be undertaken only if justified on economic grounds.

1. Department of Health for Scotland: Analysis of Running Costs of Hospitals, year ended March 31, 1954. H.M. Stationery Office. 1955. Pp. 63. 9*s*. 6*d*.
2. See *Lancet*, 1954, ii, 131.
3. Ministry of Health. Central Health Services Council: Report of the Subcommittee on the Hospital Pharmaceutical Service. H.M. Stationery Office. 1955. Pp. 40. 2*s*.
4. H.M.(55)22.

(7) That groups where expenditure on infusion fluids exceeds £1500 annually should arrange to produce these themselves, since there is reason to suppose that this would be cheaper.

The Ministry also advises on the provision of research and teaching facilities, on the siting and planning of pharmaceutical departments, and on matters relating to liaison between the pharmaceutical department and the nursing staff. Some of the subcommittee's recommendations are still under consideration.

A FAMOUS HOUSE

A DOMESTIC history of a firm as sympathetic to doctors as Messrs. Allen & Hanburys is a pleasant thing to read. In *Through a City Archway* [1] Desmond Chapman-Huston and Ernest C. Cripps bring these fabulous names to life in a chronicle which begins in 1715 in Old Plough Court—where Silvanus Bevan, a Quaker, had an apothecary's shop—and closes (but does not end) with a world-wide industrial organisation built by the able and humane characters who have shaped its destiny.

CERTIFICATION OF BLINDNESS

THE Minister of Health, after consultation with the Faculty of Ophthalmologists, has recommended to local authorities in England that all applicants for admission to the Register of the Blind or the Register of the Partially Sighted should be certified only by ophthalmologists of consultant status.[2]

Hitherto certification has been by doctors engaged whole-time in ophthalmology, or in charge of the ophthalmic department of a general hospital of not less than 100 beds; or (where the services of such a practitioner could not reasonably be obtained) by a doctor holding a diploma in ophthalmology.

The form of notification (form B.D.8) has been amended to allow the certifying ophthalmologist to recommend, in the case of persons under 16 years, the appropriate type of school for the patient. The new form will enable the Ministry more readily to analyse statistically the causes of blindness.

LITIGATION IN SCOTLAND

IN 1954 claims against members of the Medical and Dental Defence Union of Scotland again increased in number. The union's annual report,[3] discussing this growth in litigation, draws attention particularly to median-nerve palsy after faulty injection of anæsthetic solutions by inexperienced and unsupervised house-officers. When in such circumstances a legal action ensues it is difficult, says the report, to establish a satisfactory defence, for usually no mistake would have arisen had the proper precautions been observed.

During the year membership rose by 166 to a total of 7783. Claims paid amounted to £3503, including one sum of £2750.

SINDROME POLICARENCIAL INFANTIL

IN 1951 F.A.O. and W.H.O. commissioned Dr. J. F. Brock and Dr. M. Autret to tour the African continent and report on the nutritional disorder known as kwashiorkor. Their report [4] established that the disease was widespread in Africa and that local names in use in many countries referred to a nutritional disorder of childhood differing only slightly from kwashiorkor as originally described in the Gold Coast. In 1953 the same U.N. agencies again sent out Autret, this time with Dr. M. Behar, to Central America; and their report [5] shows that in most countries in this region a similar disorder is common in the early years of childhood. At least fifteen names have been used to denote the syndrome in Latin America, but now *sindrome policarencial infantil* appears to be generally established, and it is unreasonable to expect Spanish-speaking physicians to learn the word kwashiorkor. The excellent clinical photographs and the descriptions of the circumstances in which the syndrome arises in the deprived child leave no doubt that the disorder is essentially the same in Central America as in Africa. This monograph, which is published in Spanish, French, and English editions, should be of great value to all concerned with child-health services in Central America. The bibliography, which contains many references to Spanish papers little known in this country, may be useful to pædiatricians and public-health workers.

1. London: John Murray. 1954. Pp. 326. 25*s*.
2. Ministry of Health, Circular 4/55.
3. Medical and Dental Defence Union of Scotland, Ltd., 105, St. Vincent Street, Glasgow, C.2. Fifty-Second Annual Report, 1954.
4. Kwashiorkor in Africa. F.A.O. Nutritional Studies no. 8 and W.H.O. Monograph Series no. 16. Rome and Geneva, 1952. See *Lancet*, 1952, ii, 1070.
5. Sindrome Policarencial Infantil (Kwashiorkor) and its Prevention in Central America. F.A.O. Nutritional Studies no. 12. Rome, 1954. Obtainable from H.M. Stationery Office. Pp. 81. 5*s*.

University of Oxford

On Feb. 26, the degree of D.M. was conferred on J. F. D. Frazer and A. L. Turnbull.

University of Cambridge

Prof. Dorothy Russell has been elected into a supernumerary fellowship of Girton College.

University of London

Dr. E. A. Wright, experimental pathologist at the Medical Research Council's experimental radiopathology research unit at Hammersmith Hospital, has been appointed to the university readership in pathology at St. Mary's Hospital Medical School.

University of Aberdeen

At the July graduation the honorary degree of LL.D. will be conferred on Prof. John Cruickshank, who retired from the chair of bacteriology last year.

University of Dublin

The honorary degree of SC.D. is to be conferred on Prof. L. J. Witts.

Royal College of Surgeons of England

On Tuesday, April 5, at 5 P.M., at the college, Lincoln's Inn Fields, London, W.C.2, Mr. V. E. Negus will give the Lister Oration, on the Comparative Anatomy and Physiology of the Respiratory Tract in Relation to Clinical Problems.

Pharmaceutical Society of Great Britain

At a meeting of this society, to be held at 17, Bloomsbury Square, London, W.C.1, on Monday, March 14, at 7.30 P.M., Mr. G. Brownlee, D.SC., reader in pharmacology in the University of London and editor of the *Journal of Pharmacy and Pharmacology*, is to speak on the Attack on the Tubercle Bacillus.

Chemical Aspects of Thyrotoxicosis

A discussion on this subject will be held under the auspices of the fine chemical group of the Society of Chemical Industry at the Westminster Medical School on Friday, March 18, at 6 P.M. Prof. N. F. Maclagan will be in the chair, and the speakers will include Dr. A. Lawson, Dr. J. H. Wilkinson, and Dr. I. C. Gilliland.

International Society of Surgery

The sixteenth congress of this society will be held in Copenhagen from July 24 to 31, under the presidency of Prof. Evarts A. Graham (St. Louis). The programme includes discussions on the Risks of Surgical Operations and on Hepatectomy. Further particulars may be had from Mr. H. W. S. Wright, 9, Weymouth Street, London, W.1.

Travelling Fellowships

The Medical Research Council invite applications for four Eli Lilly and one Lederle travelling fellowships.

These fellowships are intended for graduates resident in this country with some training in research work who are likely to profit by a period of work at a centre in the United States before taking up positions for higher teaching or research in the United Kingdom. They will normally carry a maintenance allowance at the rate of $2700 per annum for a single fellow and $3900 per annum for a married fellow. Provision will also be made for travelling and other expenses. Forms of application may be had from the secretary of the council, 38, Old Queen Street, Westminster, S.W.1, with whom applications must be lodged not later than March 28.

Decision in Samuels's Cancer Therapy Case

The Netherlands high court has upheld the judgment of the Amsterdam court of justice in the case of Dr. J. Samuels, about whom a complaint was received from the medical inspector of health, accusing him of undermining confidence in the medical profession. A medical court in Amsterdam accepted the validity of the complaint, and withdrew, by a judgment pronounced on March 17, 1953, Dr. Samuels's authority to act as a medical practitioner. After the decision of the high court the Amsterdam court of justice ordered its sentence to be published in the *Nederlandsch Tijdschrift voor Geneeskunde*. The decision of the court is based on a report to the Dutch minister of health by Dr. J. J. Brutel de la Rivière on the value of Samuels's short-wave ray treatment of cancer.

Polar Medal

The Queen has conferred this medal on Dr. G. W. Marsh, who was base leader and medical officer at Hope Bay in 1952–53 during the Falkland Islands Dependencies survey.

Royal Statistical Society

Study Circle on Medical Statistics.—On Tuesday, March 29, at 6 P.M., at the Westminster Medical School, Horseferry Road, London, S.W.1, Dr. C. J. Donelan, Dr. K. W. Cross, and Prof. R. M. Titmuss will speak on Hospital Statistics.

Brompton Hospital Association

A dinner of this association will be held on Friday, April 15, at the Waldorf Hotel, Aldwych, London, W.C.2. Dr. G. E. Beaumont will preside. Further particulars may be had from the hon. secretary, Brompton Hospital, S.W.3.

Sanitary Inspectors' Pay

On March 7 the Industrial Disputes Tribunal announced new salary scales for sanitary inspectors, fixing a minimum of £540 a year (instead of £490) for those with statutory qualifications. The new rates will come into force on April 1.

Universities Federation for Animal Welfare

The federation's Easter congress will be held at the University of Reading from April 1 to 4. Further details may be had from Miss M. P. Williams, UFAW, 7a, Lamb's Conduit Passage, London, W.C.1.

Christian Medical Fellowship

At a meeting of the fellowship on Thursday, March 17, at 8.15 P.M., at the Royal Empire Society, Northumberland Avenue, London, W.C.2, Mr. S. Aldis will speak on the Extent of Medical Responsibility.

Airborne Medical Society

The annual dinner of this society will be held at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, on Friday, March 18, at 7.30 P.M. Particulars may be had from the secretary, Dr. J. S. Binning, medical department, Marylebone Station, N.W.1.

British Association of Sport and Medicine

After the annual general meeting of this association, which is to be held at 5 P.M. on Monday, March 21, at St. Mary's Hospital Medical School, London, W.2, Dr. Roger Bannister will speak on Athletics and Physiology. Anyone who is not a member but who wishes to attend should write to Dr. D. J. Cussen, Medical Department, St. Helen's Court, E.C.3.

Orotracheal Connection with Minimal Resistance.—In the note by Dr. John Bullough which we published on Jan. 29, under the heading of New Inventions, it should have been stated that a full account of this device and its clinical applications, including a comparison with standard apparatus available in this country, will shortly appear in *Anæsthesia*.

Appointments

BALL, J. D., M.B. Lond., M.R.C.P.: physician in charge of the Miners' Chest Diseases Treatment Centre, Llandough Hospital, Cardiff.

DAVIES, B. N., M.B. Wales: whole-time asst. chest physician (S.H.M.O.), Llanelly area.

GUILMANT, M. V., M.R.C.S.: whole-time senior casualty officer, Royal Halifax Infirmary.

LAIRD, R. M., M.B. Belf., F.R.C.S.: asst. surgeon, east Antrim H.M.C.

LASK, SAMUEL, M.D. Leeds, M.R.C.O.G.: member of the general-practitioner staff, Queen Victoria Hospital, Hanwell.

LLOYD-ROBERTS, G. C., M.B. Camb., F.R.C.S.: part-time orthopædic surgeon, The Hospital for Sick Children, Great Ormond Street, London.

MCINROY, R. A., M.B. St. And., D.T.M. & H.: part-time consultant in pathology, Bradford area.

MILLER, S. J. H., M.D. Aberd., F.R.C.S., D.O.M.S.: ophthalmic surgeon, The National Hospital, Queen Square, London.

MUIR, I. F. K., M.B.E., M.B. Lond., F.R.C.S.: plastic surgeon, West Middlesex Hospital, Isleworth.

ROBERTS, K. J., M.R.C.S., D.OBST.: asst. school M.O., Hanley, Stoke-on-Trent.

South Western Regional Hospital Board:

FULLER, ANGELA D., M.B. Camb., D.C.H.: pædiatric registrar, Southmead Hospital, Bristol.

GALLAGHER, M. J., M.B. Queensland, F.R.C.S.: orthopædic registrar, Princess Elizabeth Orthopædic Hospital, Exeter.

JOLLY, G. F., M.B. Camb., D.OBST.: registrar in obstetrics and gynæcology, Southmead Hospital.

KNUTZEN, J. S., M.B. Cape Town: E.N.T. registrar, Bath group of hospitals.

WEST, MARY F., M.B. Lond.: anæsthetic registrar, Southmead Hospital.

Diary of the Week

MARCH 13 TO 19

Tuesday, 15th

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. A. D. Porter: Actinic Eruptions.

SOUTH WEST LONDON MEDICAL SOCIETY
8.30 P.M. (Bolingbroke Hospital, Wandsworth Common, S.W.11.) Mr. E. G. Muir: Abdominal Emergencies.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. (Medical School) Sir Eardley Holland: The Princess Charlotte of Wales—a Triple Obstetric Tragedy. (University lecture.)

Wednesday, 16th

UNIVERSITY OF LONDON
5.30 P.M. (Westminster Medical School, Horseferry Road, S.W.1) Academician W. A. Engelhardt: Mechanochemistry of Muscle. (Second of two lectures.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5 P.M. *Comparative Medicine and Pathology.* Dr. J. Christian Slim (Copenhagen), Prof. C. P. Beattie, Dr. I. A. B. Cathie: Toxoplasmosis.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Allergy and Immunity in Skin Diseases.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. R. W. Riddell: Bacterial Resistance in the Treatment of Tuberculosis.

HYPNOTHERAPY GROUP
8 P.M. (1, Wimpole Street, W.1.) Dr. J. A. Hadfield: The Place of Suggestion in Analytic Treatment.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
3.30 P.M. Dr. J. Greenwood Wilson: Housing and Health.

MIDLAND MEDICAL SOCIETY
8.15 P.M. (Birmingham Medical Institute, 154, Great Charles Street.) Prof. J. H. Dible: Peripheral Vascular Disorders.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow, C.2.
5 P.M. Prof. Robert McWhirter: Breast Cancer.

Thursday, 17th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Prof. W. Melville Arnott: Order and Disorder in Pulmonary Function. (First of two Oliver-Sharpey lectures.)

UNIVERSITY OF LONDON
5 P.M. (University College Hospital Medical School, W.C.1.) Miss Honor Fell, D.SC., F.R.S.: Response of Organs in Culture to Environmental Influences.

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Lieut.-Colonel H. Neville Stafford: Coroner's Practice and Procedure.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.1
8 P.M. Dr. G. E. Flatman, Mr. R. E. Ellis: Use of Convergent Beam X-ray Therapy at the Middlesex Hospital. Mr. K. Y. Ortan: Rotation Therapy with the 2 MeV Van der Graaf Generator in Sheffield.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY
7 P.M. (Rembrandt Hotel, Thurloe Place, S.W.7.) Sir John Charles: Counting the Cost.

NUFFIELD ORTHOPÆDIC CENTRE, Wingfield-Morris Orthopædic Hospital, Oxford.
8.30 P.M. Prof. O. Scaglietti (Florence): Congenital Dislocation of the Hip.

NORTH-WESTERN TUBERCULOSIS SOCIETY
5 P.M. (Manchester Royal Infirmary.) Dr. L. E. Houghton: Corticotrophin in the Treatment of Pulmonary Tuberculosis.

MANCHESTER MEDICAL SOCIETY
8 P.M. (University staff house.) *Anæsthetics.* Dr. Geoffrey Organe: Polypharmacy and Balanced Anæsthesia.

Friday, 18th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
2 P.M. Mr. R. S. Murley: Carcinoma of the Female Breast.
4 P.M. Dr. R. A. J. Asher: Medical Uses of Hypnotism.

ROYAL SOCIETY OF MEDICINE
8.15 P.M. *Radiology and General Practice.* Dr. David Brown, Dr. J. S. Fulton: Radiotherapy from the General Practitioner's Point of View.

FACULTY OF RADIOLOGISTS
5 P.M. (Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2.) *Radiotherapy.* Mr. G. W. Blomfield: An Evaluation of the Clinical Results in 2 million Volt X-ray Therapy.

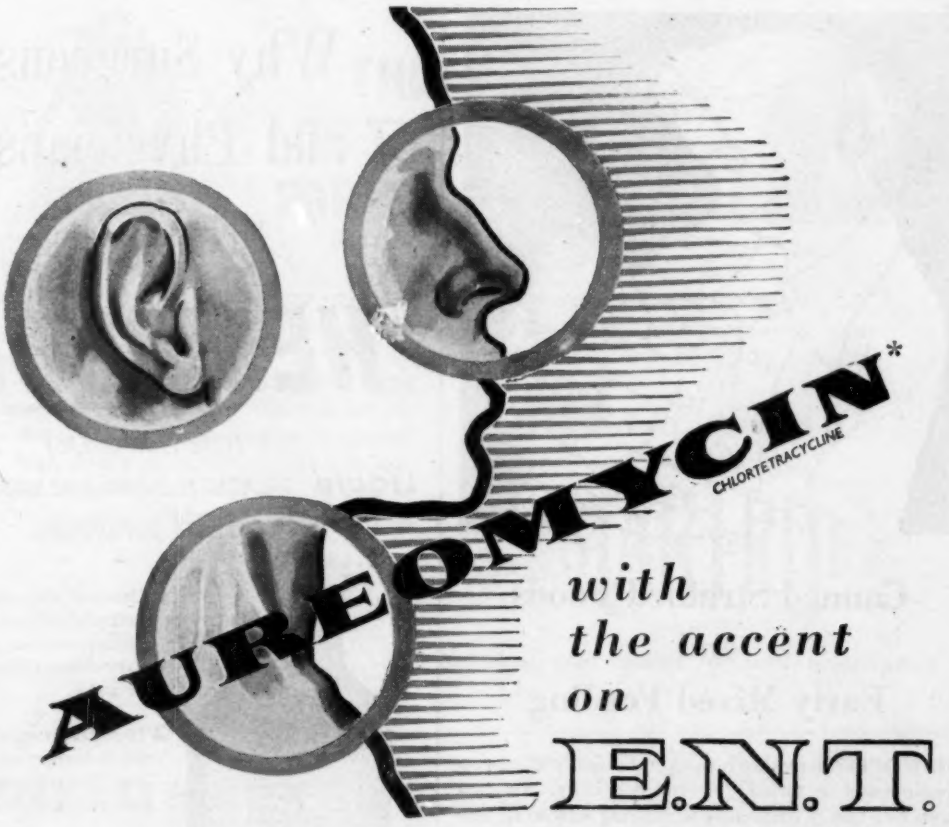
ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW
5 P.M. Dr. J. H. Hutchison: New Diseases in Pædiatrics.

Saturday, 19th

BIOCHEMICAL SOCIETY
10.45 A.M. (University College, Gower Street, W.C.1.) Scientific papers.

FELLOWSHIP OF POSTGRADUATE MEDICINE
10 A.M. (St. Stephen's Hospital, Fulham Road, S.W.10.) Prof. A. L. Banks: Social and Economic Aspects of the Rheumatic Diseases. (Opening lecture of weekend course in the rheumatic diseases.)

The Proceedings of the World Congress of Doctors for the Study of Present-day Living Conditions, held in Vienna in May, 1953, have now been published. Copies (10s. 6d.) can be had from the Caversham Centre, 25, Caversham Road, London, N.W.3.



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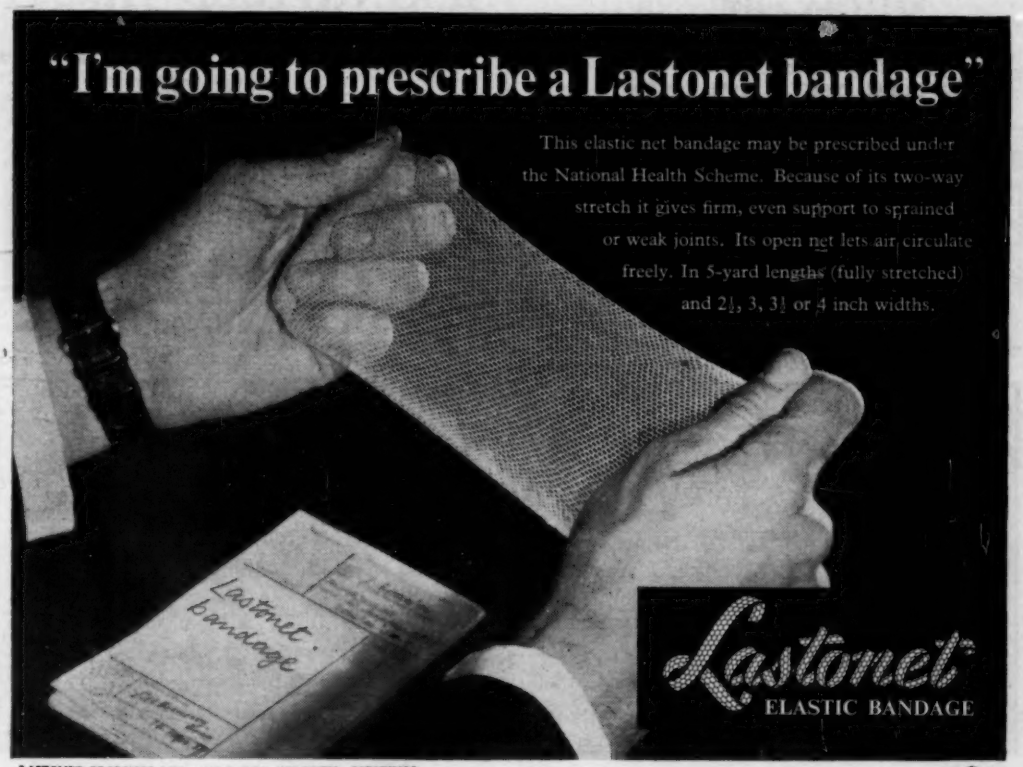

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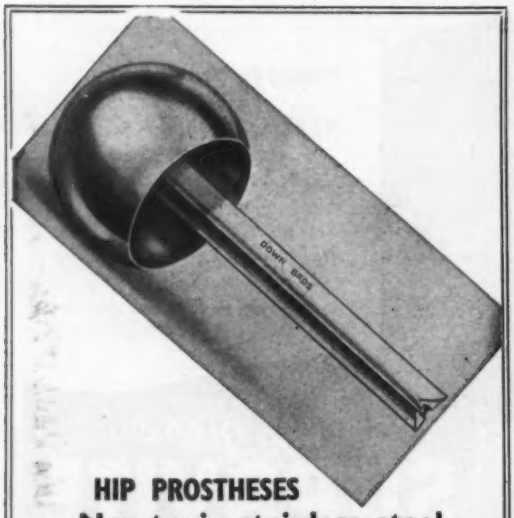

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Academic and Educational

FACULTY OF DENTAL SURGERY
ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Board invite applications for the following EXAMINERSHIPS for submission to the Council of the College :—

FOR THE LICENCE IN DENTAL SURGERY

FIRST EXAMINATION, PART I

	Number to be elected
Anatomy	1
Physiology	1
FIRST EXAMINATION, PART II	
Special Anatomy and Physiology	4
SECOND EXAMINATION	
Dental Prosthetics and Properties of Dental Materials	5
*FINAL EXAMINATION	
Dental Section	4

FOR THE FELLOWSHIP IN DENTAL SURGERY

PRIMARY EXAMINATION

Anatomy	2
Physiology	2
Pathology	2
*Dental Section	2
*FINAL EXAMINATION	
Dental Section	4

FOR THE DIPLOMA IN ORTHODONTICS

*Dental Surgery	6
Anatomy	1
Physiology	1

*Candidates must be registered under the Dentists Acts, 1878–1923.

Application forms may be obtained from the Secretary of the Faculty, Royal College of Surgeons of England, Lincoln's Inn-fields, London, W.C.2, and must be returned to him by Saturday, 26th March, 1955.

W. F. DAVIS, Secretary, Faculty of Dental Surgery.

FACULTY OF ANÆSTHETISTS
of the
ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Board invite applications for the following EXAMINERSHIPS for submission to the Council of the College :—

FELLOWSHIP OF THE FACULTY OF ANÆSTHETISTS

PRIMARY EXAMINATION

	Number to be elected
*Anatomy	2
*Physiology	2
*Pathology	2
*Pharmacology	2
FINAL EXAMINATION	
†Medicine	1
‡Surgery	1
§Anæsthetics	8

*Applicants must hold a medical qualification registrable in this country.

†Applicants must hold a higher degree or diploma in Medicine.

‡Applicants must be Fellows of the College.

§Applicants must be Fellows of the Faculty.

Forms of application may be obtained from Mr. W. F. DAVIS, Secretary, Faculty of Anæsthetists, and must be returned by not later than Saturday, 26th March, 1955. W. F. DAVIS.

UNIVERSITY OF LONDON

A LECTURE on "The Response of Organs in Culture to Environmental Influences" will be given by Dr. HONOR FELL (Cambridge) at 5 P.M. on 17TH MARCH at University College Hospital Medical School, University-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

A LECTURE on "Oral Medicine" will be given by Prof. LESTER CAHN (Columbia University) at 5.30 P.M. on 22ND MARCH at the London School of Hygiene and Tropical Medicine, Keppel-street, Gower-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF ST. ANDREWS

REFRESHER COURSE FOR GENERAL PRACTITIONERS

A 2 weeks' course will be held in Queen's College, Dundee, and associated hospitals from 20TH JUNE to 1ST JULY, 1955. Teaching will be by lecture-demonstrations and clinical rounds, with emphasis on recent advances in diagnosis and treatment. Accommodation available in students' residences at moderate cost. Course fee £10 10s. Financial assistance, subject to certain conditions, from Department of Health for Scotland. Last date for enrolment, 30th April, 1955.

Further particulars and application forms from Postgraduate Convener, Department of Pharmacology and Therapeutics, Queen's College, Dundee.

INSTITUTE OF NEUROLOGY (Queen-square)

2 COURSES OF CLINICAL DEMONSTRATIONS, open to Postgraduates will be held at The National Hospital, Queen-square, on WEDNESDAYS at 4 P.M. from 30TH MARCH to 15TH JUNE, 1955, inclusive, and on SATURDAYS at 10.30 A.M. from 2ND APRIL to 18TH JUNE, 1955, inclusive.

The fee for attending either of these courses is 1 guinea.

Application for a ticket should be made to the Dean, Institute of Neurology (Queen-square), The National Hospital, Queen-square, W.C.1, and a remittance to cover the fee enclosed. Only postal pplications will be considered.

COURSE IN ADVANCED ORTHOPÆDICS
at the
INSTITUTE OF ORTHOPÆDICS
28TH MARCH–1ST APRIL, 1955

Monday, 28th March, Town Section, 234, Great Portland-street, W.1 (Lecture Room)

10.40 A.M.–12.40 P.M. Scoliosis .. .. .. Mr. J. I. P. JAMES
2.00 P.M.–3.00 P.M. Bacteriological Aspects of Joint Tuberculosis .. Dr. C. H. LACK
3.00 P.M.–4.00 P.M. Volkmann's Contracture .. Mr. H. J. SEDDON

Tuesday, 29th March, Town Section

10.15 A.M.–11.15 A.M. Metabolic Disorders of Bone .. Dr. R. NASSIM
11.30 A.M.–12.40 P.M. Pain Down the Arm .. Dr. P. F. SANDIFER
2.00 P.M.–4.00 P.M. Medical Aspects of Joint Tuberculosis .. Dr. F. H. STEVENSON

Wednesday, 30th March, Town Section

9.45 A.M.–10.45 A.M. Bone Repair .. .. .. Dr. H. A. SIBSONS
11.00 A.M.–12.40 P.M. Peripheral Vascular Disorders .. Mr. G. L. W. BONNEY
2.00 P.M.–3.00 P.M. Biochemistry in Orthopædics .. Dr. P. G. WALKER
3.00 P.M.–4.00 P.M. Slipped Femoral Epiphyses .. Mr. H. J. BURROWS

Thursday, 31st March, Country Section, Brockley Hill, Stanmore, Middlesex (Hut 5)

10.30 A.M.–12.40 P.M. General Clinical Demonstration .. Mr. D. TREVOR
1.45 P.M.–2.45 P.M. Spondylolisthesis .. .. Mr. P. H. NEWMAN
2.45 P.M.–4.30 P.M. The Early Treatment of Paralysis in Poliomyelitis .. Mr. D. M. BROOKS

Friday, 1st April, Country Section

10.30 A.M.–12.40 P.M. General Clinical Demonstration .. Mr. K. I. NISSEN
2.00 P.M.–3.00 P.M. Plaster of Paris Technique .. Mr. E. L. TRICKEY

The fee for the course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean at the Town Section.

TUBERCULOSIS EDUCATIONAL INSTITUTE
SULLY HOSPITAL, PENARTH, GLAMORGAN

A 3-day CLINICAL COURSE for Doctors will be held at Sully Hospital on 23RD, 24TH and 25TH MARCH

Fee 3 guineas (excluding accommodation)

Particulars from Secretary, Tuberculosis Educational Institute, Tavistock House North, Tavistock-square, London, W.C.1.

RESEARCH INSTITUTE OF THE HOSPITAL FOR SICK CHILDREN
TORONTO, CANADA

RESEARCH FELLOWSHIP IN BACTERIOLOGY

Applications invited from medical graduates (Male or Female) with training in bacteriological methods, and some interest in pædiatrics. Duties will consist chiefly of laboratory investigation of problems relating to bacterial infections. To start as soon as possible. Salary $5500. Preference given to person prepared to work for 2-year period.

Applications, with names and addresses of 2 referees, to be sent (air-mail) to—

Dr. A. J. RHODES, Director, Research Institute,
The Hospital for Sick Children, Toronto, Canada.

WORLD HEALTH ORGANISATION FELLOWSHIPS

A small number of Fellowships is to be awarded in 1956 for study in European countries by the World Health Organisation to Registered Medical Practitioners, Dental Practitioners and State Registered Nurses of at least 5 years standing who are engaged in the Health Services, Medical Education or Medical Research in the United Kingdom.

Fellowships will be of 2 kinds :—

(1) RESIDENT FELLOWSHIPS for a period which will not exceed 4 months.

(2) TRAVELLING FELLOWSHIPS of shorter duration for senior persons holding responsible appointments.

Applications, giving full particulars of qualifications, experience, proposed programme and duration of study, and accompanied by the name of 2 referees, should be sent :

(a) By those resident in Scotland to the Secretary, Department of Health for Scotland, St. Andrew's House, Edinburgh, 1, and

(b) By others to the Secretary, Ministry of Health, Savile-row, London, W.1.

Envelopes should be marked "World Health Organisation Fellowships." Applications must be received on or before 13th April, 1955.

L.M.S.S.A.

FINAL EXAMINATION : SURGERY, 12th April, 9th May, 13th June, 1955. MEDICINE, PATHOLOGY, 18th April, 16th May, 20th June, 1955. MIDWIFERY, 19th April, 17th May, 21st June, 1955. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

UNIVERSITY OF LONDON KING'S COLLEGE will require on 1st October, 1955, 2 LECTURERS IN PHYSIOLOGY, 1 to replace a member of staff recently appointed to a chair. The salary will be at a point on the scale £900–£100–£1200, with family allowances and F.S.S.U. benefits.

Particulars and application forms should be obtained from the Registrar, King's College, Strand, W.C.2, whom completed applications should reach by 28th March, 1955.

BRITISH EMPIRE CANCER CAMPAIGN invites applications from suitably qualified British subjects for EXCHANGE FELLOWSHIPS IN CANCER RESEARCH during 1955–56. Fellowships are of 1 years tenure in North America at a stipend of $4000 p.a., which will be paid by the National Cancer Institute of Canada to Fellows proceeding to Canada, and by the American Cancer Society to Fellows proceeding to the United States. Travelling expenses to and from centre of work will be borne by the Campaign.

For further particulars and application forms apply to the Secretary General, British Empire Cancer Campaign, 11, Grosvenor-crescent, Hyde Park Corner, London, S.W.1. The closing date for the receipt of applications is 31st March, 1955.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for the following posts :—

(1) LECTURER IN ANATOMY,
(2) DEMONSTRATOR IN ANATOMY,

to begin duties on 1st October, 1955. Salary scales : Lecturer £800–£100–£1700 ; Demonstrator £700–£50–£800. Initial salary on either scale according to qualifications and experience.

Further particulars should be obtained from the Registrar to whom applications (4 copies) should be sent by 23rd April, 1955.

UNIVERSITY OF ABERDEEN. Applications are invited for the post of LECTURER IN EMBRYOLOGY in the Department of Anatomy. Medical qualifications desirable. Salary on revised scales as follows, with initial placing according to qualifications and experience :

If the candidate is medically qualified, scale (*c*) £1750–£100–£2050, or scale (*b*) £1200–£125–£1700 ; otherwise scale (*c*) £1350–£50–£1550 or scale (*b*) £950–£50–£1350.

Superannuation (F.S.S.U.) and children's allowance. Part of removal expenses may be refunded.

Applications (8 copies), should be lodged not later than 15th April, 1955, with the undersigned, from whom forms of application and conditions of appointment should be obtained. Applicants outside the British Isles may submit 1 copy only.

University of Aberdeen. W. S. ANGUS, Secretary.

UNIVERSITY OF MALAYA. Applications are invited for appointment to the CHAIR OF SURGERY. Duties to be assumed about October, 1955. Salary (minimum basic) £2338 p.a. plus allowances making minimum gross earnings £3920 p.a. All paid in Malayan currency. Free passages for appointee, wife, and children under 12 years. Part-furnished quarters at reasonable rent.

Applications (8 copies), naming 3 referees and detailing qualifications and experience, to be received by 30th April, 1955, by Secretary, Inter-University Council for Higher Education Overseas, 1, Gordon-square, London, W.C.1, from whom further particulars may be obtained.

THE UNIVERSITY COLLEGE OF KHARTOUM, Sudan. Applications are invited for (1) SENIOR LECTURESHIP or (2) LECTURESHIP in each of the following :—

Anatomy. Anæsthetics.
Physiology. Medicine.

Salary scales : Anatomy and Physiology—(1) £E1675–£E75–£E1975–£E2090 p.a. (2) £E1225–£E75–£E1750 p.a. Anæsthetics and Medicine—(1) £E1750–£E75–£E1975–£E2090–£E2170 p.a. (2) £E1300–£E75–£E1825 p.a. Point of entry determined by qualifications and experience. Cost-of-living allowance now approximately £E150 p.a. Outfit allowance £50 on first appointment. Passages for appointee and family on appointment, termination and leave (each long vacation after first). Appointment on contract for 3–7 years (renewable) with bonus on completion (1 months salary for each year of service). No income-tax at present payable in Sudan.

Detailed applications (8 copies), naming 3 referees, to be received by 15th April, 1955, by Secretary, Inter-University Council, 1, Gordon-square, London, W.C.1, from whom further information may be obtained.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) CONSULTANT E.N.T. SURGEON (part-time, 2 or 3 half-days a week), Hornsey Central Hospital, Park-road, N.8 (61 Beds). Hospital may be visited by direct appointment.

Applications by 12th April, 1955.

(2) CHILD PSYCHIATRIST (Senior Hospital Medical Officer), 6 half-days a week, Child Guidance Clinic, 58, Hampton-road, Twickenham. Clinic may be visited by appointment with Area Medical Officer, Elmfield House, High-street, Teddington.

Applications by 18th April, 1955.

(3) CHILD PSYCHIATRIST (6 half-days a week), Bedfordshire Child Guidance Service. Duties include clinics at 3, St. Peter's-street, Bedford, Health Centre, Dunstable, and 11, Gordon-street, Luton. Salary Senior Hospital Medical Officer scale. Clinics may be visited by direct appointment.

Applications by 21st April, 1955.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

Full-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade), Goodmayes Hospital, Ilford, Essex.

Part-time CONSULTANT RADIOLOGIST, St. Leonard's, Hospital, N.1. (2 sessions a week.)

Applications (6 copies), and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 26th March, 1955.

ST. THOMAS'S HOSPITAL, London, S.E.1. Anæsthetist. Consultant status with membership of the Medical Committee. 6 sessions per week.

Applications (12 copies), including names and addresses of 3 referees, to the Clerk of the Governors by 3rd April, 1955.

GUY'S HOSPITAL, S.E.1. The Board of Governors invites applications for the appointment of an ASSISTANT PHYSICIAN in the Department of Psychological Medicine, for attendance on 5 sessions per week. The appointment is of Consultant status and applicants are required to hold higher qualifications.

Applications (1 copy), together with the names of 3 referees, should be submitted to reach the Superintendent, Guy's Hospital, S.E.1, not later than 25th March, 1955. In accordance with Statutory Instrument No. 1259 of the National Health Service Regulations, canvassing members of the Board or Advisory Appointments Committee will lead to disqualification.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for appointment as CONSULTANT CARDIAC SURGEON. The appointment is for 2 notional half-days a week with duties in the first instance at the Royal Liverpool Children's Hospital where the appointment will be of junior status. Candidates must possess a registerable qualification and Fellowship of the Royal College of Surgeons of England.

Applications, giving full particulars of age, qualifications and details of present and previous appointments, should be accompanied by the names of 3 persons to whom reference can be made, and should reach the Secretary, 80, Rodney-street, Liverpool, 1, not later than 26th March, 1955.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for appointment as CONSULTANT ALLERGIST. The appointment is for 3 notional half-days a week with duties in the first instance at the David Lewis Northern Hospital and the Liverpool Ear, Nose and Throat Infirmary. Candidates must possess a registerable qualification and Fellowship or Membership of the Royal College of Physicians of London.

Applications, giving full particulars of age, qualifications, and details of present and previous appointments, should be accompanied by the names of 3 persons to whom reference can be made, and should reach the Secretary, 80, Rodney-street, Liverpool, 1, not later than 26th March, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) 2 Whole-time NON-RESIDENT ASSISTANT RADIOLOGISTS (Senior Hospital Medical Officer).

(i) Bury and Rochdale Hospital Centres (Bury General, Rossendale General and Birch Hill Hospitals, Rochdale Infirmary, &c.).

(ii) Ashton, Hyde and Glossop Hospitals, near Manchester (Ashton-under-Lyne General Hospital—Lake and Infirmary Branches).

Applicants should possess the D.M.R.D. and have had good experience in diagnostic radiology. 21st March, 1955.

(*b*) Whole-time NON-RESIDENT ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) to the Burnley and District Hospital Centre (Burnley General and Victoria Hospitals, Reedyford Hospital, Nelson, &c.). Successful candidate will work under general guidance of a Consultant and should live in or near Burnley. Higher qualification in anæsthetics essential. 28th March, 1955.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of Full-time SENIOR HOSPITAL MEDICAL OFFICER (non-resident). Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications, giving details of past experience and qualifications, together with the names of 3 referees, to be addressed to the undersigned as early as possible. (Special application forms can be obtained on request.)

F. J. CABLE, Secretary, United Manchester Hospitals.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Locum CONSULTANT RADIOLOGIST required at Newcastle General Hospital (850 Beds) for a period of approximately 6 months. Salary 45 guineas per week.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Newcastle Regional Hospital Board, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, immediately.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE GENERAL HOSPITAL (850 Beds). UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY (675 Beds). CONSULTANT RADIOLOGIST (whole-time or maximum part-time). Candidates may visit hospitals by arrangement with the Senior Consultant Radiologist, Newcastle General Hospital, and Royal Victoria Infirmary. The Radiologist appointed will devote the greater part of his time to neuroradiology at Newcastle General Hospital after the Neuroradiological Department is completed in about 2 years time, and from the beginning will give 2 sessions per week to neuroradiology at the Royal Victoria Infirmary. In the interim he will be engaged mainly on general radiological work at Newcastle General Hospital.

Applications, with names and addresses of 3 referees, to the Senior Administrative Medical Officer, Newcastle Regional Hospital Board, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

WELSH REGIONAL HOSPITAL BOARD. Consultant ANÆSTHETIST to serve Hospitals within Newport and East Mon. Hospital Management Committee area, based at Royal Gwent Hospital, Newport, and serving neighbouring hospitals. Candidates should possess F.F.A.R.C.S. and wide experience in the specialty. Optional whole-time or maximum part-time appointments.

Applications (12 copies), naming 3 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days.

WELSH REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT CHEST PHYSICIAN (Senior Hospital Medical Officer), Wrexham, Powys and Mawddach Hospital Management Committee. Based at Wrexham Chest Clinic. Duties include charge of beds, clinics and Mass Radiography Unit under direction of Consultant.

Applications (12 copies), naming 3 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days.

AMENDED ADVERTISEMENT

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of CONSULTANT ANÆSTHETIST based at the Royal Infirmary, Glasgow. The appointment will be whole-time or part-time on the basis of 9 notional half-days per week. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT PSYCHIATRIST at Hartwood Mental Hospital, Shotts, Lanarkshire. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Whole-time Locum Tenens RADIOLOGIST (Consultant or Senior Hospital Medical Officer) for the Salisbury Group of hospitals, from 28th March to 9th April. Salary in accordance with terms and conditions of service of hospital medical staff.

Applications to Area Secretary, South West Metropolitan Regional Hospital Board, Highcroft, Romsey-road, Winchester.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a whole-time post as CONSULTANT CLINICAL PATHOLOGIST whose headquarters will be at a new laboratory which is shortly to open at Waveney Hospital, Ballymena. The successful applicant will be responsible for providing a Pathological Service to hospitals and general practitioners in the Coleraine area and the Northern part of County Antrim. The terms and conditions of the appointment will be in accordance with the Authority's application to Northern Ireland of the Spens report.

Application to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned so as to be received not later than 2nd April, 1955.

AUSTRALIA. ROCKHAMPTON HOSPITAL, Queensland. Part-time SPECIALIST appointments. Applications in writing are invited for appointment for 3 years to the following part-time specialist appointments at the Rockhampton Hospital.

Physician : 1 session of 3 hours per week divided into an outpatient session of 2 hours and an inpatient session of 1 hour. Salary £290 p.a.

Ear, Nose and Throat : 1 outpatient session of 3 hours per week and 1 inpatient session of 3 hours per week. Salary £580 p.a.

Rockhampton has a population of 42,000 and is the centre of a district of 90,000 in population. Further particulars regarding position and opportunity for private practice will be forwarded upon request. Appointees to be not over 60 years of age.

Applications should be addressed to the Secretary, Rockhampton Hospitals Board, Rockhampton. Applications close on 11th May, 1955.

Hospital Services : Junior Appointments

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. RESIDENT SURGICAL OFFICER (Junior Hospital Medical Officer grade), vacant end of March.

Apply Hospital Secretary, enclosing copies of 2 recent testimonials.

BROMPTON HOSPITAL, S.W.3. Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Senior House Officer grade). Appointment is for 6 months from 1st April, 1955. Experience in artificial pneumothorax essential and in E.N.T. work desirable. Duties include work in tuberculosis dispensary and wards.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 19th March to KENNETH A. F. MILES, House Governor.

CHARING CROSS HOSPITAL GROUP. Applications are invited for the post of SURGICAL REGISTRAR (resident) tenable at Wembley Hospital for 1 year in the first instance from 1st June, 1955. Salary and conditions in accordance with terms of service of hospital medical staff and subject to deduction for board-residence.

Applications, with copies of testimonials, should be sent to the undersigned not later than 2nd April, 1955.

FRANK HART, Secretary to the Board.

Charing Cross Hospital, London, W.C.2.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) HOUSE SURGEON required for 6 months (General Surgery and Special Departments). Post vacant 17th May, 1955. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

COLINDALE HOSPITAL, Colindale-avenue, London, N.W.9. (Tuberculosis only—300 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (whole-time), resident or non-resident, required in the Thoracic Surgical Unit at above Hospital. Hospital may be visited by direct appointment with Physician-Superintendent.

Application forms obtainable from, and returnable to, Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 19th March, 1955.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of FIRST HOUSE SURGEON, with charge of general surgical beds. Appointment for 6 months from 1st May, 1955. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 22nd March, 1955.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of SECOND HOUSE PHYSICIAN. Appointment for 6 months from 1st May, 1955. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 22nd March, 1955.

ELIZABETH GARRETT ANDERSON HOSPITAL. (ROYAL FREE HOSPITAL GROUP.) Locum REGISTRAR in Obstetrics and Gynæcology required immediately. Resident appointment. Applicants must be registered Women medical practitioners. Salary in accordance with Ministry of Health scale.

Apply as soon as possible to Secretary, Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.1 (Telephone : EUSton 2501).

GERMAN HOSPITAL, London, E.9. (General—157 Beds.) Applications are invited from registered medical practitioners for the 6 months appointment of HOUSE SURGEON (vacant now) and should be sent to the Group Secretary, Hackney Hospital, London, E.9, quoting GH/HS.

GUY'S HOSPITAL AND SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill an established vacancy as SENIOR REGISTRAR in Psychological Medicine until 30th September, 1958. The appointment will be made jointly by the Bodies concerned and will be held at the Regional Hospital in the Bexley Group until 30th September, 1957, and the final year will be at Guy's Hospital expiring 30th September, 1958. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, S.E.1, not later than 18th March, 1955.

HACKNEY HOSPITAL, London, E.9. (General—344 Beds.) Applications are invited for 12 months appointment from 22nd April as SENIOR HOUSE OFFICER (obstetrics and gynæcology). Post recognised for M.R.C.O.G.

Apply, with copy testimonials, to Group Secretary at above address, by 19th March, quoting HH/SHO.

HACKNEY HOSPITAL, London, E.9. (General—344 Beds.) Applications for the 6 months appointment of CASUALTY OFFICER AND E.N.T. HOUSE SURGEON (House Officer grade), now vacant, should reach the Group Secretary at above address, as soon as possible, quoting HH/CHO.

HAMMERSMITH HOSPITAL AND INSTITUTES OF OBSTETRICS AND CHILD HEALTH, Ducane-road, London, W.12. PÆDIATRIC REGISTRAR (resident), required mid-May. Duties involve care of newborn babies in Maternity Department and Premature Baby Unit.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 21st March.

HAMPSTEAD GENERAL HOSPITAL, Hampstead Green, N.W.3. (ROYAL FREE HOSPITAL GROUP.) Applications are invited for the following pre-registration posts :—

HOUSE PHYSICIAN.
HOUSE SURGEON.

Both vacant 1st April, 1955, and tenable for a period of 6 months.

Application forms may be obtained from the Secretary, to whom they should be returned together with copies of 3 recent testimonials, immediately.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) SURGICAL REGISTRAR (resident or non-resident), St. Andrew's Hospital, Bow, E.3. Recognised for F.R.C.S.

(2) SURGICAL REGISTRAR (resident), St. Margaret's Hospital, Epping, Essex. Recognised for F.R.C.S. (orthopædic experience desirable).

(3) ORTHOPÆDIC REGISTRAR (resident), St. Andrew's Hospital, Billericay, Essex.

(4) ANÆSTHETIC REGISTRAR (resident), Poplar Hospital, E.14. Recognised for D.A. and F.F.A.R.C.S.

(5) REGISTRAR in Pathology (resident), St. Ann's General Hospital, Tottenham, N.15.

(6) REGISTRAR in Pathology (non-resident), Queen Mary's Hospital for the East End, E.15.

(7) SURGICAL REGISTRAR (non-resident), North Middlesex Hospital, N.18. Recognised for F.R.C.S. Duties consist of general and traumatic surgery, and may include teaching. Sleep in on duty nights.

Appointments subject to review after 1 year.

Separate applications in duplicate, with 2 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 26th March, 1955.

KING'S COLLEGE HOSPITAL, Denmark-hill, S.E.5. Applications are invited for the post of REGISTRAR to Medical Firm C. The appointment, which is subject to the terms and conditions of service for medical and dental staffs, will be from 1st April, 1955, to 30th September, 1955, and will be subject to reappointment.

Applications, stating age, education, qualifications and experience, with the names of 2 referees, should be sent to the undersigned by 26th March, 1955.

S. W. BARNES, House Governor.

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) for duties at King Edward Memorial Hospital and associate Hospitals. Resident. Vacant 1st April, 1955. A Resident Registrar Anæsthetist is employed. Post recognised for D.A. and F.F.A.R.C.S. examinations.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, Middlesex, by 22nd March, 1955.

MEMORIAL HOSPITAL, Woolwich, S.E.18. Casualty OFFICER (recognised for F.R.C.S.), vacant 14th April. 6 months resident appointment. Senior House Officer grade. Salary £745 p.a., less £150 p.a. for residence.

Apply to Secretary.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited for the posts of RESIDENT MEDICAL OFFICER, to commence 8th May, 1955, and HOUSE PHYSICIAN (resident) to commence 22nd May, 1955, at Maida Vale Hospital for Nervous Diseases, London, W.9. Appointments in the first instance for 6 months, renewable. Grading as Senior House Officer or Registrar according to experience. Preference will be given to candidates holding a higher degree and previous neurological experience will be an asset.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary at Maida Vale Hospital, not later than 2nd April, 1955.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. 2 OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEONS (resident), required for 1st May, 1955 :—

(*a*) Registered medical practitioner.

(*b*) Pre-registration candidate (second post).

Both posts recognised by R.C.O.G. for Diploma, and as a combined post for Membership. Candidates must have held house appointments in either medicine or surgery. Large Obstetric and Gynæcological Department.

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 22nd March.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE PHYSICIAN required for 6 months starting on 1st May. Approved pre-registration appointment (first or second post). General medicine.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital by 22nd March.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. CLINICAL ASSISTANT for Psychiatric Department. 2 sessions per week, required from 1st May, 1955. General practitioners rate of salary. Duties chiefly psychotherapy. Applicants should have sufficient varied experience to act as Consultants Deputy.

Applications, with copies of recent testimonials and names of 2 referees, to the Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 26th March, 1955.

ROYAL MARSDEN HOSPITAL (late Royal Cancer Hospital), Fulham-road, London, S.W.3. Applications are invited for the posts of :—

(1) SURGICAL REGISTRAR (full-time) to begin duty immediately.

(2) SURGICAL SENIOR REGISTRAR (part-time) to begin duties in June, 1955. Applicants should state for how many sessions they are available.

Forms of application are obtainable from the House Governor to whom applications, together with copies of 3 recent testimonials, should be sent, not later than 28th March, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Surgery (resident) to fill a vacancy in the approved trainee establishment at the Seamen's Group of hospitals, for duty mainly at the Dreadnought Seamen's Hospital, Greenwich, S.E.10. Married quarters are available at the Hospital if desired. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 26th March, 1955.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General and Traumatic Surgery to fill a vacancy in the approved trainee establishment at the Bermondsey and Southwark Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 26th March, 1955.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from registered Women practitioners for the appointment of Part-time PÆDIATRIC AND MEDICAL REGISTRAR, for 7 sessions per week, vacant on 22nd June, 1955. Canvassing will disqualify, but candidates are invited to visit the Hospital.

Forms of application from the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11 (enclosing a stamped addressed envelope). Completed forms to be returned not later than 25th March, 1955.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics), preferably resident.

Applications, stating age, qualifications, experience, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary immediately.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (General—192 Beds.) CLINICAL ASSISTANT to the Consultant in Psychiatry required for 1 half-day session. Experience in short methods of psychotherapy, physical treatments and abreactive therapy desirable. Salary £175 p.a. per weekly half-day.

Applications, stating qualifications and experience, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary by 26th March, 1955.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (Acute General—192 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in General Medicine (resident) vacant from 4th April, 1955.

Applications, with copies of 2 testimonials, to the Hospital Secretary by 19th March, 1955.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (Acute General—192 Beds.) Applications are invited from registered or provisionally registered medical practitioners for the post of HOUSE SURGEON. Post vacant 12th April, 1955.

Applications, with copies of 2 testimonials, to the Hospital Secretary by 19th March, 1955.

ST. MARK'S HOSPITAL, City-road, London, E.C.1. Part-time CLINICAL ASSISTANT (honorary) required in the Outpatients Department on Monday afternoons.

Further particulars obtainable from the Secretary.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. RESIDENT SURGICAL OFFICER (Senior Registrar grade) required for St. Paul's Hospital on 1st June, 1955. Applications invited from male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), with 12 copies of 3 recent testimonials, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 2nd April, 1955.

ST. THOMAS'S HOSPITAL, London, S.E.1. Surgical REGISTRAR for 1 year in the first instance.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 26th March, 1955.

ST. THOMAS'S HOSPITAL, London, S.E.1. Registrar to the Cardiac Department for 1 year in the first instance.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 26th March, 1955.

ST. THOMAS'S HOSPITAL, London, S.E.1. Senior REGISTRAR to the Department of Thoracic Medicine for 1 year in the first instance.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 26th March, 1955.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. Applications are invited for the post of SURGICAL REGISTRAR, falling vacant on 1st July, 1955. The appointment is whole-time, non-resident, and is graded as that of a Senior Registrar.

Full particulars and form of application, which must be returned not later than Monday, 28th March, 1955, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 1st July, 1955, for a RESIDENT REGISTRAR to the E.N.T. Department (Registrar grade).

Further particulars and form of application, which must be returned not later than Monday, 2nd May, 1955, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WANSTEAD HOSPITAL, Hermon Hill, E.11. (191 Beds.) Applications are invited for the post of CASUALTY OFFICER (graded Senior House Officer) vacant 25th March, 1955. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY, 91, Dean-street, W.1. Applications are invited for the resident post of SENIOR HOUSE SURGEON commencing 1st April, 1955. Candidates should have had surgical experience and previous neurological or neurosurgical experience would be an advantage.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to reach the Hospital Secretary, by 21st March, 1955.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited from fully registered medical practitioners for the post of HOUSE PHYSICIAN (post-registration) in the Paediatric Department at above Hospital.

Application forms from the Hospital Secretary, to be returned by 24th March, 1955.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited from fully registered practitioners for the post of HOUSE PHYSICIAN (post-registration) in General Medicine at above Hospital which becomes vacant on 1st May, 1955.

Application forms from the Hospital Secretary to be returned not later than 24th March, 1955.

WOOLWICH GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum Tenens SENIOR REGISTRAR in Radiology. Whole-time for approximately 6 months.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18 (WOOlwich 2670).

ABBOTS LANGLEY, HERTFORDSHIRE. LEAVESDEN HOSPITAL. SENIOR HOUSE OFFICER required at above Hospital for mental defectives (2250 Beds).

Applications to Physician-Superintendent.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. ABERDEEN ROYAL INFIRMARY. Applications are invited from provisionally registered and fully registered medical practitioners for a HOUSE OFFICER appointment (non-resident) in the Skin and V.D. Department of the above Hospital. The post, which is approved as a Pre-registration Service appointment, is for the period to 13th July, 1955. Salary and conditions of service in accordance with the terms issued by the Department of Health for Scotland.

Applications, with full details, should be lodged immediately with the Secretary, Aberdeen General Hospitals, 62, Queen's-road, Aberdeen.

ALTON GENERAL HOSPITAL. (121 Beds.) Winchester GROUP OF HOSPITALS. HOUSE SURGEON required to assist in steadily expanding surgical work including casualty at this Hospital which is being developed. Post vacant 14th May.

Applications, with copies of 2 testimonials, to be sent to the Group Secretary, Royal Hampshire County Hospital, Winchester.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT SENIOR HOUSE OFFICER (Male) for pathology. Previous clinical experience essential but pathological experience not essential.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

BARNSLEY. ST. HELEN HOSPITAL. Applications are invited for the post of HOUSE SURGEON (Senior House Officer grade) to the Obstetrical and Gynæcological Unit (107 Beds), duties to commence on 1st April, 1955. The post is recognised for the D.Obst.R.C.O.G. and the M.R.C.O.G. Salary in accordance with terms and conditions of service for hospital medical staff.

Applications, giving names of 2 referees, should be sent as soon as possible to— J. H. NUNN, Group Secretary, Barnsley Hospital Management Committee.

33, Gawber-road, Barnsley.

BASINGSTOKE, HAMPSHIRE. PARK PREWETT HOSPITAL. PARK PREWETT GROUP HOSPITAL MANAGEMENT COMMITTEE, NO. 47. Registered medical practitioners are invited to apply for the appointments of PSYCHIATRIC REGISTRARS (2 vacancies) at the above Hospital. Opportunity will be given for experience in all branches of psychiatry.

Application forms (5 copies) may be obtained from the Group Secretary, Park Prewett Hospital, Basingstoke, Hants, and returned within 14 days of the appearance of this advertisement.

BASINGSTOKE (near), HAMPSHIRE. ROOKSDOWN HOUSE PLASTIC AND ORAL SURGERY CENTRE. PARK PREWETT GROUP HOSPITAL MANAGEMENT COMMITTEE, NO. 47. PLASTIC SURGICAL REGISTRAR. The appointment is a whole-time one and some previous experience in plastic surgery is desirable.

Application forms (5 copies) may be obtained from the Group Secretary, Park Prewett Hospital, Basingstoke, to whom they should be returned within 14 days of the appearance of this advertisement. Applicants may visit the Hospital by arrangement.

BATH CLINICAL AREA. The Board of Governors of the UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in Obstetrics and Gynæcology. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be appointed to work for the first year in the Bath Group of hospitals. The post is recognised for the M.R.C.O.G.

Applications, stating date of birth, qualifications and experience together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 26th March, 1955.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (1059 Beds.) SENIOR HOUSE OFFICER (anæsthetics), resident or non-resident. Exceptional opportunities for reading for higher qualifications.

Apply Medical Superintendent with details of qualifications, experience, age, and copies of 3 recent testimonials.

BIRMINGHAM. SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. RESIDENT MEDICAL OFFICER (Senior House Officer). Post vacant end of March. General Hospital with 5 other Resident Medical Officers.

Apply Medical Superintendent.

BIRMINGHAM (SANATORIA) GROUP. Senior Regis-TRAR (medical) for treatment of tuberculosis and chest diseases. Duties at group hospitals and Birmingham Chest Clinic. Higher medical qualification desirable and experience chest diseases and tuberculosis.

Application forms from Secretary, Regional Hospital Board, Augustus-road, Birmingham, 15, to be returned before 28th March, 1955.

BIRMINGHAM (SANATORIA) GROUP. Medical REGISTRAR for treatment of tuberculosis and chest diseases. Duties at Romsley Hill Hospital (133 Beds including tuberculosis (diabetic unit)), and also at Birmingham Chest Clinic. Resident.

Application forms from Hospital Management Committee Secretary, Yardley Green Hospital, Birmingham, 9, to be returned before 28th March, 1955.

BIRMINGHAM, 13. SORRENTO MATERNITY HOS-PITAL. (112 Beds, including 24 premature baby cots.) OBSTETRIC HOUSE SURGEON. Recognised for D.Obst.R.C.O.G. Hospital affiliated to Birmingham Medical School for training of students. Vacant 1st May.

Applications to Obstetrician by 23rd March, 1955.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (780 Beds.) HOUSE SURGEON (pre-registration) required 1st May, 1955. Recognised for F.R.C.S. 1 of 3 surgical units of approximately 85 general beds under 2 Consultant Surgeons.

Applications, with copies of 2 recent testimonials, to Secretary.

BIRMINGHAM, 15. ROYAL ORTHOPÆDIC HOS-PITAL. (Long and short term orthopædic cases (non-traumatic). 336 Beds and extensive outpatient services.) SENIOR HOUSE OFFICER—registered medical practitioners, preferably with orthopædic experience.

Applications, with copies of testimonials, to Administrator.

BIRMINGHAM. UNITED BIRMINGHAM HOSPITALS. BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN, Showell Green-lane, SPARKHILL, BIRMINGHAM, 11. Applications are invited from registered medical practitioners for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for duty with the Professorial Unit from 1st June, 1955. The appointment is recognised for the M.R.C.O.G.

Application forms, obtainable from the House Governor at the above address, to be returned not later than 2nd April, 1955.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the appointment of SENIOR HOUSE OFFICER (E.N.T. Department), non-resident, for duties within the United Hospitals. The post is tenable for 1 year. Some previous experience in the specialty desirable.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned by 19th March, 1955.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the post of RESIDENT REGISTRAR in Anæsthetics for duties in the United Hospitals, and resident at the Queen Elizabeth Hospital. The appointment is tenable for 1 year in the first instance. Preference will be given to candidates who have passed Part I D.A., or Primary F.F.A.R.C.S.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners or pre-registration candidates for the post of HOUSE SURGEON (general surgery—72 Beds). Immediate vacancy.

Apply, naming 2 referees, to—
K. G. T. LUXFORD, Esq., Secretary/Finance Officer.
The General Hospital, Bishop Auckland.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for RESIDENT HOUSE OFFICER (not pre-registration). Appointment to commence 7th May, 1955.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or names of referees should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) THE MANCHESTER REGIONAL HOSPITAL BOARD invite applications from registered practitioners for appointment on the staff of the Department of Thoracic Surgery. The successful applicant will be graded either REGISTRAR or SENIOR HOUSE OFFICER according to qualifications and experience. The post offers excellent opportunities for gaining experience in a Consultant Staffed Hospital and Department.

Applications, together with the names of 2 referees or references, should be sent to the Group Secretary, Victoria Hospital, Blackpool.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) Applications are invited from provisionally registered practitioners for the post of RESIDENT HOUSE OFFICER (gynæcology and obstetrics) which is recognised for M.R.C.O.G. Post vacant 1st May, 1955. This is a busy general hospital with a large Outpatient Department and the post offers excellent opportunities for experience under Consultant Gynæcologists and Obstetricians.

Applications, with names and addresses of referees, to the Hospital Secretary.

BLACKBURN AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE.

REGISTRAR (surgery) required immediately at Royal Infirmary, Blackburn (262 acute beds). Recognised for F.R.C.S.

Forms of application from the Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

HOUSE SURGEONS (2) required for Royal Infirmary, Blackburn, mid-April. Recognised for pre-registration purposes and for F.R.C.S.

HOUSE SURGEON required for Queen's Park Hospital, Blackburn, end April. Recognised for F.R.C.S. and for pre-registration purposes.

Applications to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN (near). CALDERSTONES HOSPITAL, WHALLEY, near BLACKBURN, LANCASHIRE. (For Mental Defectives: 2300 Beds.) CALDERSTONES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER. Salary scale £775–£50–£1075. Health Service conditions of service and superannuation scheme. Unfurnished house available for rent to married man; residential quarters available for single man.

Applications, stating age, qualifications and experience, together with the names and addresses of 3 referees, to be submitted to the Medical Superintendent, Calderstones Hospital, Whalley, near Blackburn, as soon as possible.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Resident HOUSE SURGEON (gynæcology and obstetrics) required end March. Pre-registration post and recognised for D.Obst. R.C.O.G. The Unit comprises 26 gynæcological and 61 obstetric beds and a busy Outpatient Department.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 recent testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by not later than 19th March.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Locum RESIDENT CASUALTY OFFICER (Registrar grade) required 5th–18th April. Salary £17 10s. per week.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 recent testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by not later than 19th March.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Bolton District General Hospital (Townleys Branch, Psychiatric Unit)

SENIOR HOUSE OFFICER in Psychiatry (resident). This Psychiatric Unit is attached to a General Hospital. Consultant Psychiatrist in charge. All forms of modern treatment in use. Post offers excellent facilities for anyone desiring to specialise in psychiatry and attend the D.P.M. course at Manchester University. Hospital also recognised for London and Irish D.P.M. Outpatient clinics in existence. Post vacant early April and tenable for 12 months.

The Royal Infirmary Bolton (237 Beds)

RESIDENT HOUSE SURGEON for general surgical duties. Tenable for 6 months and recognised under the Pre-registration Service Scheme. Also recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. MEDICAL OFFICER required for duties in the Geriatric Department (which contains acute admission wards and has full physiotherapy, laboratory and radiological facilities) and also to assist in the supervision of the health of nurses. Salary scale £775–£1075.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees to Group Secretary, The Royal Infirmary, Bolton.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. ROYAL VICTORIA HOSPITAL, Poole-road, WESTBOURNE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (resident) for E.N.T. and ophthalmic duties. Post vacant 25th March. In addition to duties at the above Hospital, the successful candidate will be required to assist in the E.N.T. outpatient clinics at the Royal Victoria Hospital, Boscombe, and the Poole General Hospital. The appointment is recognised for the D.O. and D.L.O. Diplomas.

Applications to the Deputy Hospital Secretary, Royal Victoria Hospital, Shelley-road, Boscombe.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE, BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of REGISTRAR in Pathology. The post becomes vacant on 18th May, 1955. The successful applicant will have opportunities for experience in all 4 departments of the Laboratory and, if desired, in the Public Health Laboratory nearby. The Laboratory is recognised for the Diploma in Pathology. Married quarters available, if required.

Forms of application, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, should be returned to him, duly completed, within 6 days of the appearance of this advertisement.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN. The post which becomes vacant on 20th April is recognised for pre-registration purposes.

Applications to the Deputy Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of GENERAL HOUSE SURGEON. The post which becomes vacant on 20th April is recognised for the F.R.C.S. examination and for pre-registration purposes.

Applications to the Deputy Hospital Secretary.

BRADFORD, YORKSHIRE. THE ROYAL EYE AND EAR HOSPITAL. (105 Beds.) SENIOR HOUSE OFFICER required for E.N.T. Department of 56 Beds. Recognised for D.L.O. and F.R.C.S. Salary £745 p.a., less £150 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD A AND B HOSPITAL MANAGEMENT COMMITTEES. JUNIOR HOUSE OFFICER required for newly formed active Geriatric Admission Unit. The major portion of the duties will be carried out at St. Luke's Hospital, Bradford.

Applications, stating age, nationality, qualifications and experience, and copies of testimonials, to the Secretary, Royal Infirmary, Bradford.

BRADFORD ROYAL INFIRMARY. House Surgeon (general), vacant 20th March, 1955. Recognised for F.R.C.S. and pre-registration purposes. Salary £425–£525 p.a., less £125 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP HOSPITALS. (78 Beds.) SENIOR HOUSE OFFICER for duties in the E.N.T. Department of the above Group. Recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, &c., together with the names of 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON. SUSSEX EYE HOSPITAL, Eastern-road, BRIGHTON, 7. (56 Beds.) SENIOR HOUSE SURGEON (Senior House Officer) and HOUSE SURGEON (House Officer) required mid-April. Posts recognised for F.R.C.S. under 23 (b).

Applications, stating age, qualifications and experience, together with the names of 2 referees, to the Administrative Officer.

BRISTOL. WINFORD ORTHOPÆDIC HOSPITAL. (230 Beds.) Applications are invited from registered medical practitioners for post of SENIOR HOUSE OFFICER which is suitable for candidate reading for a higher grade qualification and is recognised for F.R.C.S. Hospital is staffed by Consultants of teaching hospital.

Apply, stating age, qualifications and experience, with testimonials, to Secretary.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MAN-AGEMENT COMMITTEE. Applications are invited for the appointment of a Male JUNIOR ASSISTANT VENEREOLOGIST (non-resident). The duties of the successful candidate will be primarily in connection with V.D. He will be attached to Frenchay Hospital and in addition will be required to undertake duties in the various Bristol area clinics. Previous experience in venereology an advantage. The appointment will be subject to the National Health Service superannuation regulations and terms and conditions for hospital medical staff. Salary scale £775–£50–£1075 p.a.

Applications, with full particulars of age, qualifications and experience and the names and addresses of 3 referees, should reach the Secretary, Frenchay Hospital, Bristol, not later than 19th March, 1955.

BRISTOL. HORTHAM-BRENTRY HOSPITAL MANAGEMENT COMMITTEE. A Part-time MEDICAL OFFICER required to serve the undermentioned small mental deficiency institutions in Bath, totalling 130 Beds, at a remuneration of £350 p.a.

Rock Hall House, Combe Down, Bath.
House of Help, 112, Walcot-street, Bath.
The Old Rectory, Bathwick-hill, Bath.

The Medical Officer would be required to visit each home weekly, and as required for day-to-day medical care, also to carry out certain statutory duties under the Mental Deficiency Acts. Previous experience in mental deficiency would be a recommendation. He would be responsible to the Medical Superintendent of the Group.

Applications, to the Group Secretary, Hortham-Brentry Hospital Management Committee, Brentry Hospital, Westbury-on-Trym, Bristol.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Pædiatrics. The post is based on Bury General Hospital, but will include duties at other hospitals in the Group.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (medical), Rossendale General Hospital. Resident or non-resident.

Applications, giving names of 2 referees, should be made to H. WILKINSON, Esq., Group Secretary.

Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL, BURY, LANCS. HOUSE OFFICER (surgery), pre-registration appointment. A vacancy exists at the present time.

Apply, stating age, qualifications and experience, to—
H. WILKINSON, Group Secretary.

BUSHEY MATERNITY HOSPITAL, Bushey Heath, HERTFORDSHIRE. (60 Beds.) RESIDENT OBSTETRIC HOUSE SURGEON for above Hospital. Post recognised for D.Obst. R.C.O.G. and for pre-registration purposes. 6 months appointment, vacant 12th April, 1955.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director, Edgware General Hospital, Edgware, Middlesex, by 26th March, 1955.

CANTERBURY (near). ST. AUGUSTINE'S HOSPITAL. CHARTHAM, near CANTERBURY. JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female) required at this Mental Hospital. Salary scale £775–£1075 p.a. A modern house is available on the Hospital estate for a married man at a reasonable rental. The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high admission-rate and is recognised for the D.P.M.

Apply to the Medical Superintendent.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty) which is now vacant. Salary £745 p.a. Recognised for the F.R.C.S.

Applications to be sent to the Hospital Secretary at the above Hospital, together with copies of 3 recent testimonials.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Casualty OFFICER (Senior House Officer grade) required at above Hospital from 17th April, non-resident if desired.

Apply, with full particulars and copies of 3 recent testimonials, to the Secretary by 26th March. Interviews early April.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE. (*a*) SENIOR HOUSE OFFICER (medical) required at Sully Hospital, Sully, Glam. (Thoracic Centre—324 Beds), commencing 1st April. Experience gained in investigation and treatment of lung and heart conditions.

(*b*) HOUSE OFFICER required in Accident Unit, St. David's Hospital, Cardiff (656 Beds), commencing 1st April. Practical experience gained in all types of injury under direction of a Consultant.

Form of application, in each case, from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CHELMSFORD AND ESSEX HOSPITAL. Applications are invited for the resident post of CASUALTY OFFICER (Senior House Officer). It is recognised for the F.R.C.S. and offers excellent experience in the treatment of fractures and diagnosis of acute medical and surgical emergencies. Opportunity is given for Casualty Officer to follow up his cases in the wards and to obtain operating experience in major theatre under the guidance of the Consultants or the Resident Surgical Officer. Off duty time is generous and the post is one likely to suit both an officer seeking a higher qualification in surgery or one intending General Practice. The vacancy will occur on 1st April. Salary £745 p.a., with £130 deducted for residential emoluments.

Apply Secretary, Chelmsford Hospital Management Committee, Chelmsford and Essex Hospital, Chelmsford.

CHELMSFORD. ST. JOHN'S HOSPITAL. Applications are invited from registered practitioners for the post of RESIDENT PÆDIATRIC HOUSE OFFICER (Male or Female) commencing as soon as possible, to work in the Pædiatric Unit of the Chelmsford Hospital Group. The Unit includes a Premature Baby Nursery of 10 cots and a Neonatal Department in the Maternity Block of the Hospital. The Department is recognised for the D.C.H.

Applications, stating age, nationality, qualifications and experience, together with recent testimonials, should be sent as soon as possible to the Group Secretary, Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHELTENHAM GENERAL AND EYE HOSPITAL. (170 Beds.) RESIDENT SENIOR HOUSE OFFICER (casualty) required.

Applications, giving details of qualifications and experience and names of 3 referees, to be sent to the Group Secretary, Sandford-road, Cheltenham.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) Required, RESIDENT HOUSE SURGEON (pre-registration) for the Gynæcological (30 Beds) and E.N.T. (16 Beds) Departments. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent as soon as possible.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required from 23rd April. Senior House Officer or House Officer (Intern) grade. Post recognised for F.R.C.S. or for pre-registration internship. Preference will be given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent as soon as possible.

CHESTERFIELD ROYAL HOSPITAL. (324 Beds. Recognised for the D.A. and F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) with additional duties when required at other hospitals in the Group. Experience in all types of anæsthesia, except for neurosurgery, can be obtained in this Group of hospitals. Post becomes vacant 14th April. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st March, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts :—

Essex County Hospital, Colchester (188 Beds)

SENIOR HOUSE OFFICER to Casualty and E.N.T. Departments. Post tenable for 6 months or 1 year. Recognised for F.R.C.S.

Clacton and District Hospital, Clacton-on-Sea (58 Beds)

SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, to the Group Secretary, 14, Pope's-lane, Colchester, Essex.

CREWE AND DISTRICT MEMORIAL HOSPITAL. SOUTH CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer grade) required as soon as possible. The successful candidate will receive a thorough training and previous experience is not essential. Good practical experience in anæsthesia available. Recognised for the D.A.

Apply, quoting 2 referees, to Group Secretary, Barony Hospital, Nantwich, Cheshire, before 21st March, 1955.

DERBY CITY HOSPITAL. (256 Beds. Recognised for training in Obstetrics for D.Obst.R.C.O.G. and M.R.C.O.G.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (obstetrics) required. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st March, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (casualty).

HOUSE OFFICER (surgical), pre-registration. Post now vacant.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (anæsthetics). Resident. Previous experience house appointments essential. Experience available general surgery, gynæcology, orthopædics, plastic surgery unit.

SENIOR HOUSE OFFICER (surgical).

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Resident HOUSE SURGEON required immediately in Orthopædics and Casualty. Post recognised for pre-registration purposes. This post offers facilities for good and varied experience in a busy Orthopædic and Accident Hospital which serves a wide mining and industrial area.

Apply, giving age, experience and names of 2 referees, to the Group Secretary, Dryburn Hospital, Durham.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ORTHOPÆDIC REGISTRAR. East Suffolk and Ipswich Hospital and Ipswich Borough General Hospital. Post provides excellent training in orthopædic surgery. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 28th March, 1955. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, East Suffolk and Ipswich Hospital, Ipswich.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in E.N.T. Surgery, Norfolk and Norwich Hospital and Jenny Lind Children's Hospital, Norwich. Post recognised for D.L.O. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 28th March, 1955. Candidates invited to visit Hospitals by direct arrangement with Hospital Management Committee Secretary, Norfolk and Norwich Hospital.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. RADIOLOGICAL REGISTRAR at the Norfolk and Norwich Hospital (440 Beds). The Department is the centre for Consultant Radiological Services to a large hospital group in Norwich, Great Yarmouth, and Norfolk. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

SURGICAL REGISTRAR. Great Yarmouth and Gorleston Hospital (Norfolk and Norwich Group). Post recognised for F.R.C.S. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Secretary-Superintendent at the Hospital.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 21st March, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT SENIOR CASUALTY HOUSE OFFICER required at above Hospital. Salary £745 p.a.; deduction of £155 p.a. for board, residence, &c.

Apply immediately, stating age, nationality, qualifications and experience, together with the names of 2 referees, to Group Secretary, Edgware General Hospital.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER in Geriatrics. This is a newly created post. The duties will involve the medical treatment and rehabilitation of elderly sick in a new and developing department of the Hospital. There will be facilities for postgraduate study.

Applications, stating age, qualifications, experience and the names of 2 referees, to Group Secretary by 19th March, 1955.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) Locum CASUALTY REGISTRAR required for the month of April, 1955, at above Hospital.

Apply immediately to Medical Director.

EDINBURGH NORTHERN GROUP OF HOSPITALS. 1 HOUSE PHYSICIAN, incorporating E.N.T., for the Eastern General Hospital, for 6 months commencing 1st April, 1955. Salary scale £425–£525 p.a., less £125 p.a. residential emoluments.

Applications to Medical Superintendent, Western General Hospital, Edinburgh, 4.

EDINBURGH NORTHERN GROUP OF HOSPITALS. 1 CASUALTY HOUSE OFFICER required for Leith Hospital for 6 months commencing 1st April, 1955. Salary scale £425–£525 p.a., less £125 p.a. residential emoluments.

Applications to Medical Superintendent, Western General Hospital, Edinburgh, 4.

EDINBURGH NORTHERN GROUP OF HOSPITALS. 1 SURGICAL PÆDIATRIC HOUSE OFFICER required for the Western General Hospital for 6 months commencing 1st April, 1955. Salary scale £425–£525 p.a., less £125 p.a. residential emoluments.

Applications to Medical Superintendent, Western General Hospital, Edinburgh, 4.

EDINBURGH. ROYAL HOSPITAL FOR SICK CHILDREN. Applications are invited from registered medical practitioners and pre-registration graduates for appointments of RESIDENT HOUSE SURGEON (E.N.T. Department), and RESIDENT HOUSE SURGEON, for 6 months commencing 1st April, 1955. National Health Service scale.

Applications, stating age, qualifications and experience, and names of 2 referees, to be sent immediately to Medical Superintendent, Edinburgh Central Hospitals, 18, Rillbank-terrace, Edinburgh, 9.

ELLESMERE PORT HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Junior Hospital Medical Officer). Accommodation suitable for a married practitioner is available at a reasonable rental.

Applications, giving full details together with the names and addresses of 2 referees, should be forwarded to the Group Secretary, XIII Chester and District Hospital Management Committee, 5, King's-buildings, Chester.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Appointment of RESIDENT HOUSE SURGEON (first post—approved pre-registration), vacant 25th April, 1955. General Surgical duties. Registered practitioners within 3 months of qualification eligible. 6 months appointment.

Applications, with names of 2 referees, to the Secretary of the Management Committee.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) RESIDENT SENIOR HOUSE OFFICER (surgery) vacant 1st April, 1955. Post recognised for F.R.C.S. Busy general hospital with easy access to London. Salary on national scale, less deduction for board, lodging, &c.

Applications, with copies of 2 testimonials, to reach the Group Secretary, St. Margaret's Hospital, Epping, Essex, by 18th March, 1955.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (E.N.T. Department—31 Beds), vacant now. Resident or non-resident. The post is recognised for the F.R.C.S. examination.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary immediately.

GLASGOW NORTH-EASTERN MENTAL HOSPITALS BOARD OF MANAGEMENT require SENIOR HOUSE OFFICER (Physician) for Medical Unit at Gartloch Hospital, Gartcosh, Glasgow. Salary £745 p.a. Married quarters may be available.

Applications, stating age, qualifications and experience, together with 2 testimonials or the names of 2 referees, to be sent to the Secretary and Treasurer, 2154, Gartloch-road, Gartcosh, Glasgow.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Anæsthetics. Duties at above Infirmary.

Write, giving 3 names for reference, not later than 24th March, 1955, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Pathology. Based at above Infirmary, but may involve duties in the Lanark County Area.

Write, giving 3 names for reference, not later than 24th March, 1955, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER in the Acute Geriatric Unit (70 Beds/for assessment and rehabilitation) supervised by a Consultant Physician specialising in geriatrics. The appointment offers excellent clinical experience in the diagnosis and treatment of acute and other illnesses in the elderly, and will be for 2 years in the first instance.

Applications, stating age, qualifications and experience, with the names of 2 referees, to be sent to the Medical Superintendent.

GREENOCK. RAVENSCRAIG (MENTAL AND GENERAL) HOSPITAL. (472 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (resident post). Mental and General experience to be gained. Hospital is recognised as a training centre for the D.P.M. examination.

Applications, in writing, to the Physician-Superintendent.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (orthopædics) required. The post is recognised to the extent of 6 months for the F.R.C.S. and the Hospital has an excellent reference library.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st March, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. Grimsby Hospital MANAGEMENT COMMITTEE. Applications are invited for the post now vacant, of SENIOR HOUSE OFFICER (orthopædic). Locum would be considered.

Applications, with names and addresses of 2 referees, to Hospital Secretary, Grimsby General Hospital.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Junior HOSPITAL MEDICAL OFFICER in Anæsthetics required. Board-residence available.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 2nd April, 1955. Recognised as pre-registration post and for F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator as soon as possible.

HERTFORD COUNTY HOSPITAL. (Situated 21 miles from London.) Applications are invited from registered medical practitioners for the appointment of a Whole-time Locum REGISTRAR (surgical). To commence as soon as possible for approximately 1–2 months. Salary £17 10s. per week.

Applications, giving full details, together with copies of recent testimonials or the names of referees, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (356 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in General Medicine, vacant on 11th April, 1955. The post offers a good opportunity for working for higher qualifications and there are approximately 70 acute medical beds.

Applications, stating age, nationality, together with copies of recent testimonials, to Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (356 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopædic Department. The post is graded Senior House Officer and is recognised for the F.R.C.S. examinations. The Department has 2 Consultants, about 60 beds, and a large outpatient attendance; it offers wide experience.

Applications, stating age, nationality, and experience, together with copies of recent testimonials, to Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications with copies of recent testimonials, to the Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICERS (2) for general medicine. Separate Units.

Applications, stating age, nationality, qualifications, with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 15th March, 1955.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, KEIGHLEY, YORKSHIRE. (138 Beds.) RESIDENT HOUSE SURGEON (either sex) (general surgery, orthopædics, E.N.T.). Post recognised under F.R.C.S. regulations. First, second, or third post. Vacant 21st March, 1955. Approved pre-registration appointment. Tenable for 6 months.

Applications, with full particulars as to age, nationality, qualifications and experience and copies of recent testimonials, to be sent to Group Secretary, St. John's Hospital, Fell-lane, Keighley.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) Applications are invited for HOUSE OFFICER (anæsthetics). The post is recognised for D.A.

Applications to Hospital Secretary.

LEEDS, 2. PUBLIC DISPENSARY AND HOSPITAL. LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (Senior House Officer) at the above Hospital. The appointment will be for a period of 1 year. Salary in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, with an appropriate deduction in respect of board, lodging, &c.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

Halifax Group (resident). 2 main hospitals with aggregate of 300 Beds in the surgical specialties.

Chest Diseases

Castle Hill Sanatorium, Cottingham, East Yorks (220 Beds) (resident).

Obstetrics and Gynæcology

Hull A Group (84 obstetric and 74 gynæcological beds). Recognised for M.R.C.O.G. (resident).

Ophthalmology

St. James's Hospital (22 eye beds—5600 new outpatients annually) and the Public Dispensary, Leeds (non-resident).

Orthopædic Surgery

(*a*) Royal Bath Hospital, Harrogate (40 orthopædic beds). Duties in connection with the Regional Rheumatism Scheme (resident).

(*b*) Woodlands Orthopædic Hospital, Rawdon (100 Beds), and Orthopædic Outpatient Department, Bradford Royal Infirmary. Offers excellent training in all branches of Accident and Orthopædic Surgery (may be non-resident).

Psychiatry

Oulton Hall Hospital, near Wakefield and affiliated Mental Deficiency Colonies (aggregating 780 Beds) (non-resident). Facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 24th March, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR required for the Radiotherapy Centre. The post will be tenable for 1 year in the first instance and renewable for a second. Terms and conditions of service for hospital medical staff apply.

Applications, giving details of age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 2, by Thursday, 31st March, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. RESIDENT AURAL OFFICER required. The post is graded Senior House Officer and the salary £745 p.a.

Applications, giving details of age, qualifications, previous posts with dates, and 3 names for reference, should be sent to the Secretary to the Board as soon as possible.

LEICESTER ROYAL INFIRMARY. (507 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (ophthalmology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st March, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LEIGH INFIRMARY, Leigh, Lancashire. (102 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) for duties at the above and other hospitals in the Group. The post which is tenable for 1 year will be resident, and is recognised for the D.A. and F.F.A.R.C.S. examinations. Wide experience in all branches of anæsthesia is available and there are particular facilities for experience in major thoracic and orthopædic work.

Applications, with names of 2 referees, to undersigned as soon as possible. T. W. HURST, Secretary,
Wigan and Leigh Hospital Management Committee.
Knowsley House, Wigan.

LIVERPOOL. AINTREE HOSPITAL (late Fazakerley Sanatorium). LIVERPOOL AND DISTRICT FAZAKERLEY GROUP OF HOSPITALS MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (surgical). Applications are invited from registered medical practitioners. The Hospital is for the treatment of pulmonary and non-pulmonary tuberculosis, and is a main centre for thoracic surgery and has an Orthopædic Department. Salary will be in accordance with terms and conditions of service for hospital medical staff.

Applications, endorsed Resident Senior House Officer, to be submitted immediately to the Physician-Superintendent, Aintree Hospital, Fazakerley, Liverpool, 9.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL SOUTHERN HOSPITAL. Applications are invited for a post of CASUALTY OFFICER (House Officer grade) for the period to 31st August, 1955. The post is open to registered practitioners or pre-registration applicants.

Apply as soon as possible on forms obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL LIVERPOOL CHILDREN'S HOSPITAL (HESWALL BRANCH). Applications are invited for a post as HOUSE SURGEON for the period to 31st August, 1955. The post is open to registered practitioners and to pre-registration applicants.

Apply as soon as possible on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LUTON CHEST CLINIC, Grove-road, Luton. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (resident preferred) required 25th April, 1955, at the above Clinic. Appointment will include duties in attached medical wards in St. Mary's Hospital, at Hitchin Chest Clinic and attendance at sessions for minor thoracic surgery. Good training in general medicine as well as experience in treatment of tuberculosis and diseases of the chest essential. Successful candidate would be encouraged to pursue further postgraduate studies. Clinic may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 25th March, 1955.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Post vacant now. Salary £745 a year, with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL, ALTRINCHAM. (130 Beds.) NORTH AND MID-CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE OFFICER (surgical).

Applications to Group Secretary, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER. MONSALL HOSPITAL, Newton Heath, MANCHESTER, 10. BOOTH HALL AND MONSALL HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR required for Tuberculosis Unit and non-tuberculosis chest wards, also for non-tuberculosis outpatient clinic sessions at Manchester Northern Hospital. The unit is associated with the Regional thoracic surgical team.

Applications to Group Secretary, Booth Hall Hospital, Manchester, 9.

MANCHESTER REGIONAL HOSPITAL BOARD. Senior REGISTRAR in Thoracic Surgery firstly at Baguley Hospital, near Manchester (major tuberculosis surgery), and at Park Hospital, Davyhulme, near Manchester (non-tuberculosis surgery). Arrangements may later be made for the successful candidate to work concurrently at the Manchester Royal Infirmary.

Forms of application, obtainable from the Senior Administrative Medical Officer, Cheetwood-road, Manchester, 8, should be returned by 28th March, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR in Orthopædics, based at Bury General Hospital.

Apply, stating age, qualifications, experience, and names of 2 referees, to H. WILKINSON, Group Secretary.
Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in Chest Diseases, the main duties to be with the Bury and Rossendale Hospital Management Committee, with duties at Chest Clinics and at Aitken Sanatorium and Peel Hall Pulmonary Hospital, and other hospitals in the area.

Apply, stating names of 2 referees, to—
H. WILKINSON, Group Secretary.
Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of RESIDENT SURGICAL OFFICER (Registrar grade) at the Christie Hospital and Holt Radium Institute.

Applications, with full details including names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the appointment of REGISTRAR in Obstetrics and Gynæcology, vacant immediately. Salary at national scale. Initially the appointment will be for 1 year, renewable normally for a second year. The successful candidate will act during the first year as Resident Obstetric Surgeon in the obstetrical branch of the Hospital at Whitworth-street, and during the second year as Resident Surgical Officer in the gynæcological branch at Whitworth Park. The duties include some teaching, the supervision of the work of House Officers and Resident Medical Students, and very considerable clinical responsibility. Candidates must, therefore, have had fairly full previous experience in obstetrics and gynæcology. A higher qualification is not essential.

Forms of application may be obtained from the undersigned. The closing date is 1st April, 1955.
A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.
H. R. NORTH, General Superintendent.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 1 SENIOR HOUSE OFFICER (pædiatrics) required. Post vacant 1st May, 1955. Hospital recognised for training for Diploma in Child Health.

Forms from Secretary.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 1 HOUSE OFFICER (general surgery) required, pre-registration post. Recognised for F.R.C.S. examination. Post now vacant.

Application forms from Secretary.

MEDWAY AND GRAVESEND HOSPITAL MANAGE- MENT COMMITTEE. Locum SURGICAL REGISTRAR, based at St. Bartholomew's Hospital, Rochester, required immediately for some months. A higher qualification desirable. Resident or non-resident. Salary £17 10s. per week.

Apply, with full details, to Group Secretary, 20, Star-hill, Rochester, Kent.

MIDDLESBROUGH. ST. LUKE'S HOSPITAL. St. Luke's HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident). Salary scale £775–£50–£1075 p.a. Furnished flat available. The post in the first instance will be tenable for a period of 4 years and is renewable. Facilities for all forms of psychiatric work are available and arrangements exist between the Regional Hospital Board and the University Department of Psychological Medicine by which a Junior Hospital Medical Officer who is accepted by the latter department may participate in the Regional Training Scheme in order to obtain the D.P.M. (Durham). Previous experience of psychiatric work is not essential.

Applications, stating age, qualifications and appointments held, also the names of 3 referees, should be addressed to the Physician-Superintendent at the Hospital.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds. 10 Residents. Recognised F.R.C.S.) SENIOR HOUSE OFFICER required for Casualty Department towards end of March. This is the base Hospital in the Group and all medical and surgical emergencies are admitted through casualty, which is under the full-time charge of a Senior Hospital Medical Officer, there being also 2 Senior House Officers. A new Department with excellent facilities and accommodation has recently been opened. Post recognised F.R.C.S. for 6 months and tenable 6 or 12 months as desired. Salary £745, less £125 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

NEWTON ABBOT HOSPITAL. (General Section 65 Beds.) RESIDENT SENIOR HOUSE SURGEON (Male or Female) required approximately 25th March, 1955.

Applications (quoting reference F.364/28), stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay.

NEWCASTLE REGIONAL HOSPITAL BOARD. East CUMBERLAND GROUP OF HOSPITALS. Whole-time REGISTRAR PHYSICIAN (resident) at the Cumberland Infirmary, Carlisle (340 Beds). Appointment for 1 year in the first instance, and may be renewed for a further period.

Applications, together with names and addresses of referees (preferably), or testimonials to a total of 3, to be sent to the Senior Administrative Medical Officer, 72, Warwick-road, Carlisle, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD.
Durham Hospital Management Committee
REGISTRAR ORTHOPÆDIC SURGEON (whole-time), married or single accommodation.
Northallerton Hospital Management Committee
REGISTRAR ORTHOPÆDIC SURGEON (whole-time) resident.
Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Newcastle Regional Hospital Board, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the non-resident appointment of REGISTRAR to the Department of Bacteriology at the Royal Victoria Infirmary. The successful candidate will work under the supervision of the Clinical Bacteriologist and the duties will include those concerned with hospital blood-transfusion. The appointment is for 1 year in the first instance and is subject to the terms and conditions of service of hospital medical staff in the National Health Service.
Applications, giving full particulars and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.
A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Vacancies 1st April, 1955, for the following :—
2 HOUSE OFFICERS (general surgery). Recognised for F.R.C.S.
HOUSE OFFICER (Department of Anæsthetics). Recognised for D.A.
SENIOR HOUSE OFFICER (Casualty Department). Recognised for F.R.C.S. (Deduction £125 for residential emoluments.)
HOUSE OFFICER (Casualty Department). Recognised for F.R.C.S.
All posts, except those of Anæsthetic House Officer and Casualty Senior House Officer, recognised for pre-registration. 6 months appointments in the first instance.
Applications, enclosing copies of 3 testimonials, as soon as possible to S. G. HILL, Superintendent.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Inquiries are invited concerning ROTATING INTERN posts each of 6 months duration, to commence on 1st April, 1955, in various specialties, on Junior Hospital Medical Officer salary scale and conditions of service. Single accommodation available. Deduction at the rate of £125 a year for residential emoluments. Posts are particularly suitable for candidates who have completed military service and desire further experience before entering general practice or specialising.
Inquiries should be addressed to—
S. G. HILL, Superintendent.

NORTHAMPTON (near). CREATON SANATORIUM. Applications are invited from suitably qualified medical practitioners for the post of SENIOR HOUSE OFFICER. The Sanatorium has 140 Beds and is for the treatment of both pulmonary and non-pulmonary tuberculosis. A new and enlarged Thoracic Surgery Unit is nearing completion.
Applications, stating age, experience, and qualifications, together with the names and addresses of 2 referees, should be sent to the Secretary, Northampton and District Hospital Management Committee, General Hospital, Northampton.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (orthopædic and fracture). The post offers exceptional experience in traumatic surgery. Duties to commence as soon as possible.
Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER ; duties to commence on 1st April, 1955. The post offers exceptional experience in traumatic surgery. Salary and conditions of service in accordance with Ministry regulations.
Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior Surgical HOUSE OFFICER required at the above Hospital. Good opportunity for obtaining operating experience in general surgery. Duties to commence on 1st April, 1955. Salary and conditions of service in accordance with the published conditions of the Ministry of Health.
Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. (420 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR in E.N.T. Surgery required. Appointment for 1 year in the first instance.
Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st March, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ORPINGTON HOSPITAL, Orpington, Kent. (813 Beds.) RESIDENT HOUSE SURGEON required 1st April–31st August. Post recognised for F.R.C.S.
Apply Physician-Superintendent.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. SENIOR HOUSE OFFICER in General Medicine, vacant 11th May, 1955.
Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, to be sent to ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PAISLEY AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. ROYAL ALEXANDRA INFIRMARY, PAISLEY. JUNIOR HOSPITAL MEDICAL OFFICER required for General Surgical Unit. 6 months tenure.
Applications to be submitted to Group Medical Superintendent at the above address, immediately.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (116 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (surgical) required about 1st April. This is the senior resident post and entails duties with the 2 Consultant Surgeons, as well as supervising the other resident staff of 2 House Surgeons and a House Physician. Salary £775–£1075, less £150 board-residence. Excellent experience.
Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—
GYNÆCOLOGICAL HOUSE SURGEON for duties at Queen Alexandra Hospital (50 gynæcological beds), vacant now. Post recognised for M.R.C.O.G. Pre-registration post. At the end of 6 months successful candidate would be offered post at St. Mary's Hospital, Portsmouth (50 obstetric, 40 gynæcological beds). Recognised for M.R.C.O.G. and D.Obst.R.C.O.G.
Royal Portsmouth Hospital
HOUSE OFFICER required Orthopædic Department (104 Beds), vacant now.
Locum CASUALTY OFFICER required (Senior House Officer grade), for 6 weeks from the end of March.
Infectious Diseases Hospital (310 Beds—Fever and T.B.)
SENIOR HOUSE OFFICER, vacant 1st May.
Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.
35, Grove-road, South, Southsea.

RAMSGATE GENERAL HOSPITAL. (101 Beds.) SENIOR HOUSE OFFICER (surgical). Recognised for F.R.C.S. and D.A. Salary £745 p.a., less charge for residential emoluments.
Applications, with copies of testimonials, to Hospital Secretary.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road. (139 Beds.) HOUSE PHYSICIAN (Male) required —preferably second or third appointment.
Apply to the Hospital Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER in Pathology required in this large general hospital containing well-equipped laboratory where excellent opportunities exist for gaining extensive experience.
Applications should be sent immediately to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) SENIOR HOUSE OFFICER for the Regional Poliomyelitis Unit (27 Beds) and in general medicine, vacant from 1st May, 1955.
Apply to Medical Superintendent.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE PHYSICIAN (Male), required from beginning of April next. (Post not approved for pre-registration purposes.)
Applications should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male), required from 19th April, 1955. (Post not approved for pre-registration purposes.)
Applications should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum SENIOR SURGICAL REGISTRAR required 19th March–2nd April. Person appointed may be required to do emergency work at other hospitals within the Group and possession of car an advantage.
Applications together with copies of 3 testimonials, to Hospital Secretary.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following posts :—
(*a*) NON-RESIDENT ANÆSTHETIC REGISTRAR at the Royal Infirmary. Post vacant 30th June, 1955.
(*b*) RESIDENT REGISTRAR or SENIOR HOUSE OFFICER in the Paediatric Department, Jessop Hospital for Women. Post vacant 1st May, 1955. Grade according to qualifications and experience. The post is associated with the Department of Child Health in the University of Sheffield, and it is possible that there may be an interchange with the Registrar at the Children's Hospital. The successful candidate may be required to attend 1 outpatient session per week at the Children's Hospital.
(*c*) From registered medical practitioners for the resident post of HOUSE PHYSICIAN to the Professorial Unit at the Children's Hospital. Post vacant 1st May, 1955.
Applications for the above posts to state age, qualifications and experience with the names of 3 referees, and should be addressed as follows :—
Post (*a*) be sent immediately to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.
Post (*b*) within 7 days of the appearance of this advertisement to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.
Post (*c*) within 10 days of the first appearance of the advertisement to the Superintendent, Children's Hospital, Western Bank, Sheffield, 10.
Copy testimonials may be sent for the last post.

SHEFFIELD. CITY GENERAL HOSPITAL. Applications are invited for the resident appointment of HOUSE SURGEON (general surgery), recognised pre-registration or Senior House Officer post. Vacant immediately.

Applications, giving full details of age, nationality, qualifications, present and previous appointments if any, and the names of 2 persons to whom reference may be made, should be forwarded to the Group Secretary at Nether Edge Hospital, Sheffield, 11.

SHEFFIELD REGIONAL HOSPITAL BOARD. Supernumerary SENIOR REGISTRAR in General Medicine required for the Derbyshire Royal Infirmary from 1st April, 1955. Duties will be divided approximately equally between clinical work and clinical research. Candidates will be required to submit, in outline, proposals for the research project they wish to pursue. The tenure of this appointment will be for 1 year in the first instance.

Further details and application forms obtainable from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Completed forms to be returned by 21st March, 1955.

SALFORD ROYAL HOSPITAL. Salford Hospital Management Committee. Applications are invited for the pre-registration post of HOUSE SURGEON (Casualty Department). Appointment vacant and tenable until 20th July, 1955.

Applications, with copies of 3 testimonials, should be addressed to the Secretary, Salford Royal Hospital, Salford, 3, Lancs.

SALISBURY GENERAL HOSPITAL. Salisbury Group Hospital Management Committee. Applications are invited for the appointment of Locum RESIDENT HOUSE SURGEON. Post vacant from now until 30th June.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Salisbury Group Hospital Management Committee. Applications are invited for the post of RESIDENT HOUSE SURGEON (Orthopædic Department) which is open to pre-registration candidates, and which becomes vacant at the end of April, 1955. The Department has 35 Beds and a large outpatient turnover.

Applications, stating age, nationality, qualifications, experience, and naming 2 referees, to the Group Secretary, Odstock Hospital, Salisbury.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD invite applications for a Whole-time RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER post at Culduthel Hospital, Inverness (102 Beds—tuberculosis and infectious diseases). Appointment to be held for 1 year, but may be extended for a second year.

Further particulars and schedules of application, which are obtainable from the undersigned, should be lodged by 19th March, 1955. A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Ophthalmology to the Professorial Unit at the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 2nd April, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Ophthalmology in the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 2nd April, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in E.N.T. Surgery at the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 2nd April, 1955.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Medicine in the Royal Infirmary of Edinburgh. The appointment is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, by 26th March, 1955.

SCOTLAND. RED CROSS SANATORIA OF SCOTLAND. (156 Beds.) Applications are invited for the appointment of REGISTRAR. A Thoracic Surgical Unit is situated at the Sanatoria and this appointment offers valuable training in the assessment and selection of cases for major chest surgery and in their pre-operative and post-operative management.

Applications, giving details of qualifications and experience, together with the names of 2 referees, should be sent to the Medical Director, Red Cross Sanatoria of Scotland, Tor-na-Dee, Milltimber, Aberdeenshire, within 10 days from the appearance of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Psychiatry, based at Stobhill Hospital, Glasgow.

SENIOR REGISTRAR in Pathology, based at the Royal Infirmary, Glasgow, with duties in the Lanarkshire Area.

SENIOR REGISTRAR in Medicine, based at Law Hospital, Carluke.

REGISTRAR in Medicine, based at the Royal Infirmary, Glasgow.

REGISTRAR in Surgery based at the Royal Infirmary, Glasgow.

REGISTRAR in Pathology, based at the Western Infirmary, Glasgow.

REGISTRAR in E.N.T. Surgery, based at the Royal Infirmary, Glasgow.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 9th April, 1955.

SWANSEA HOSPITAL, Swansea. Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the appointment of SENIOR HOUSE OFFICER in the Ophthalmic Department of the above Hospital. The post is recognised for the F.R.C.S. (Eng.) and D.O. examinations.

Applications, stating age, qualifications and experience, should be addressed to the Hospital Secretary.

ST. ALBANS, HERTFORDSHIRE. HILL END HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Psychiatry (whole-time). Duties involve work in the Neurosis Centre and mental wards. Candidates should possess the D.P.M. Hospital may be visited by direct appointment.

Application forms obtained from, and returnable to, Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, by 25th March, 1955.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON at Whiston Hospital, Prescot (892 Beds). The post is recognised for Pre-registration Service.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded to the Secretary, Group Office, Whiston Hospital, Prescot, Lancs, immediately.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER in Orthopædics vacant shortly.

Applications (2 references) to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER (E.N.T.), vacant now.

Applications (2 references) to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (obstetrics and gynæcology) required. 2 posts vacant shortly—end March and mid-April (approximately), pre-registration posts. Recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Detailed applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, with copy testimonials as soon as possible.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (general surgery) required. Post vacant April. Hospital recognised for F.R.C.S. examination and post for pre-registration.

Apply, with copy testimonials, stating age, nationality and full details of previous service, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the non-resident post of SENIOR HOUSE OFFICER to the E.N.T. Departments in the Group.

Applications, stating age, nationality and qualifications, together with the names of 2 referees or copies of 2 testimonials, to be addressed to the undersigned, immediately.

59B, Shaw-heath, Stockport. H. G. PRICE, Secretary.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Locum REGISTRAR in E.N.T. Surgery (non-resident) which is now vacant. The duties will be in the hospitals and clinics in the Group, but mainly at Stockport Infirmary.

Applications, stating age, experience and qualifications, together with the names of 2 referees, to be forwarded to the undersigned, immediately.

59B, Shaw-heath, Stockport. H. G. PRICE, Secretary.

STOCKPORT. STEPPING HILL HOSPITAL. (490 Beds.) Applications are invited for 2 posts of RESIDENT SENIOR HOUSE OFFICER (surgery), vacant 12th April and 1st May, 1955. The posts are recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire, immediately.

STOCKPORT INFIRMARY, Stockport. (162 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Assistant Resident Surgical Officer), vacant 1st April, 1955. The post is recognised for the F.R.C.S.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

STOCKPORT INFIRMARY. Stockport and Buxton HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics). The post may be resident or non-resident (preferably resident) and is recognised for the D.A. and F.F.A.R.C.S. There are facilities for study.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, immediately.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. ANÆSTHETIC REGISTRAR required at the above Hospital. Post recognised for F.F.A.R.C.S. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 20th March.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN required for post vacant 18th April. Preference given to persons seeking pre-registration post.

Applications, stating age, experience, and qualifications with dates, together with copies of 2 testimonials, to Hospital Secretary.

TORQUAY. TORBAY HOSPITAL. Resident Casualty OFFICER (Senior House Officer status) required 1st April, 1955. There is a complement of 5 Resident House Officers.

Applications (quoting reference F.955/53), stating qualifications, nationality, age, with copy testimonials, to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay.

TORQUAY. TORBAY HOSPITAL. Torquay District HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (surgery) required. Post recognised for F.R.C.S. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, nationality, age, with copy testimonials (and quoting Ref. F.955/52), to the Group Secretary, Torbay Hospital, Torquay.

TUNBRIDGE WELLS. KENT AND SUSSEX HOSPITAL. (277 staffed and available beds.) Locum RESIDENT SURGICAL OFFICER required 1st April pending permanent appointment. Salary £17 10s. per week, less deduction for residence.

Applications, stating age, nationality, qualifications, previous appointments, with copies of 2 recent testimonials, to Group Secretary, Sherwood Park, Pembury-road, Tunbridge Wells, as soon as possible.

TYNEMOUTH VICTORIA JUBILEE INFIRMARY. (109 Beds.) SOUTH EAST NORTHUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration or registered practitioners for the post of HOUSE SURGEON. Candidates with suitable experience will be considered for appointment in Senior House Officer grade.

Applications to Group Secretary, Preston Hospital, North Shields.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (196 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER for a new Casualty Department.

Applications, giving full details of age, qualifications and experience, with copies of 2 testimonials, should be sent to the Administrator.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR (general surgery), St. Woolos Hospital, Newport, Mon. (379 Beds). Post covers 56 surgical beds. Non-resident.

REGISTRAR (obstetrics and gynæcology). Based East Glamorgan Hospital, Church Village, expected visit other hospitals in Group. Recognised for D.Obst.R.C.O.G. and M.R.C.O.G. Resident.

REGISTRAR in Pædiatrics based at St. David's Hospital, Cardiff, to serve other hospitals in the district. Non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Senior REGISTRAR (E.N.T. surgery), Swansea General Hospital, Swansea (403 Beds). 2 years in the first instance, with a possible extension at the end of that time. Hospital recognised for F.R.C.S. and D.L.O. Non-resident.

Forms of application from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. 2 Surgical REGISTRARS (orthopædics) to serve Cardiff Hospital Management Committee. Based at Prince of Wales Hospital, Rhydlafar, near Cardiff (200–300 Beds). Hospital is Regional Orthopædic Centre for South Wales area. Married accommodation available. Subject review end first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WICKFORD (near), ESSEX. RUNWELL HOSPITAL. (1032 Beds.) SENIOR HOUSE OFFICER (Male or Female) required for 1 of the Consultant's Divisions and to assist in outpatient work. Excellent postgraduate facilities for D.P.M. Salary £745 ; residential charge £180.

Applications, with copies of testimonials, to the Secretary.

WORTHING HOSPITAL, Lyndhurst-road, Worthing. (210 Beds—General.) WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. The vacancy of HOUSE SURGEON will occur at the beginning of April, 1955.

Applications from either registered medical practitioners, or pre-registration candidates, stating age, qualifications, experience, nationality, and enclosing copies of 2 recent testimonials, to be forwarded to the Hospital Secretary as soon as possible.

A. V. OAKTON, Group Secretary.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. RESIDENT SENIOR CASUALTY OFFICER (Male or Female) required. Junior Hospital Medical Officer grade. The Casualty Department offers exceptional opportunities for the treatment and disposal of a large number of cases of wide variety and interest and is closely associated with the Orthopædic Department. The successful applicant will work under the supervision of the Consultant Orthopædic Surgeons.

Applications, with full details and the names of 2 referees, should be forwarded to the Secretary, Royal Albert Edward Infirmary, Wigan, as soon as possible.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. HOUSE PHYSICIAN (Senior House Officer grade) for duty in the Pædiatric Department at Wigan Infirmary, and also to undertake neonatal work at Billinge Hospital. Post recognised for D.C.H. vacant 1st April, 1955. Consultant Pædiatrician in charge.

Applications, with names of 2 referees, to the Secretary, Royal Infirmary, Wigan.

WOLVERHAMPTON GROUP.

New Cross Hospital, Wolverhampton

HOUSE OFFICER (general surgery). Pre-registration post. Vacant now.

Apply Secretary, The Royal Hospital, Wolverhampton.

WORCESTER (near). POWICK HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high admission-rate, is recognised for the D.P.M., and has associated Child Guidance Clinics and a Mental Deficiency Institute similarly recognised. Arrangements are made for Medical Officers to attend at the Birmingham Medical School for instruction in neurology.

Applications, with full details and the names of 2 referees, to be forwarded to the Medical Superintendent.

WORCESTER. RONKSWOOD HOSPITAL. Resident ANÆSTHETIST (Senior House Officer status) required for post which is recognised by the Faculty of Anæsthetists. Duties cover all specialties. Married accommodation available.

Applications, with names and addresses of 3 referees, to be sent to the Hospital Secretary.

NORTHERN IRELAND HOSPITALS AUTHORITY. Joint appointment by the Queen's University, Belfast, and the Authority. Applications are invited for a whole-time post in Obstetrics and Gynæcology which will be filled by an appointment made jointly by the Queen's University and the Authority. The appointment may be made in either of 2 grades viz : PRINCIPAL TUTOR/PRINCIPAL REGISTRAR or SENIOR TUTOR/SENIOR REGISTRAR and will, in the first instance, be for the period ending 30th September, 1955.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 28th March, 1955.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for 2 posts of REGISTRAR or SENIOR REGISTRAR in the Division of Obstetrics and Gynæcology at the above-named Teaching Hospital which is in special relationship with the University of London. A higher qualification in obstetrics and gynæcology is desirable but not essential. The successful candidates will be required to assume duties by the end of June and early in October, 1955, respectively. The appointments will each be for 1 year in the first instance, subject to renewal. Salary is in the scale £800–£100–£1000/£1100–£100–£1400 p.a., depending on experience and qualifications. Single accommodation and board, or a limited number of unfurnished flats for unmarried or married Officers, are provided at a deduction of £125 p.a. or 5% of salary, respectively. Return first-class passage by sea will be paid for 1 person only in each case.

Further information may be obtained from the Hospital Manager and Secretary, University College Hospital, Mona, St. Andrew, Jamaica, B.W.I., to whom applications stating age, nationality and details of qualifications and experience, together with 3 recent testimonials or the names and addresses of 3 referees, should be sent by 16th April, 1955.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, DUNEDIN, NEW ZEALAND. DEPARTMENT OF SURGERY. ORTHOPÆDIC AND TRAUMATIC UNIT, DUNEDIN HOSPITAL. Applications are invited for the position of SENIOR ORTHOPÆDIC REGISTRAR, to commence duties as soon as possible. The applicant must possess a higher qualification in surgery and have had extensive experience in orthopædic and traumatic surgery. His duties will include the teaching of Medical Students, Nurses and Physiotherapy Students. The appointment is for a minimum of 1 year and tenable up to 3 years, subject to termination by 3 months notice in writing from either side. The salary payable under the Hospital Employment (Medical Officers, Regulations 1952, Amendment No. 1), is £N.Z.806 5s. p.a., rising by annual increments of £N.Z.57 10s. to a maximum of £N.Z.921 5s. p.a., plus cost-of-living bonus of £N.Z.81 p.a. A living-out allowance of £N.Z.179 8s. p.a. is payable in addition to the above salary if non-resident. Travelling expenses are payable as stated in the conditions of appointment. Application forms and further particulars may be obtained from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, or from the Office of the High Commissioner for New Zealand, 415, Strand, London, W.C.2.

Applications, stating age, qualifications and experience, together with radiological and health certificates, and copies of testimonials, will be received by the undersigned up till 10 A.M. on Monday, 23rd May, 1955.

W. A. WILLIAMSON, Secretary.

Otago Hospital Board, P.O. Box 946, Dunedin, New Zealand.

Public Appointments

ABERDEEN. CORPORATION OF THE CITY OF ABERDEEN. Applications for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH are invited from registered medical practitioners who are registered on the medical register as holders of a Diploma in Sanitary Science, Public Health, or State Medicine. The salary scale applicable to the post is £1400 rising by 2 annual increments of £100 and 1 of £50 to £1650 p.a. The post is superannuable and the person selected for appointment will be required to pass a medical examination before appointment.

Further particulars of the terms and conditions of appointment may be had from the undersigned, with whom applications, stating the age, present position, professional qualifications, and experience of the applicant, and the names and addresses of 3 referees, must be lodged on or before 6th April, 1955. Each applicant is required to furnish 40 copies of his application.

J. C. RENNIE, Town Clerk.

Town House, Aberdeen, 7th March, 1955.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications are invited for the temporary appointment of 3 Whole-time MEDICAL OFFICERS in the Maternity and Child Welfare Department to take holiday duty during the summer months, commencing on 2nd May, 1955. The appointments are non-resident and the salary offered is at the rate of £18 4s. 5d. per week. Successful applicants expected to remain, if required, for a period of 6 months.

Application forms obtainable from the Medical Officer of Health, Council House, Birmingham, 3. Completed forms to be returned to him, with copies of 3 testimonials, not later than 28th March.

BUCKS. COUNTY OF BUCKS. Applications are invited from registered medical practitioners holding the qualifications prescribed by the Sanitary Officers (Outside London) Regulations, 1935 and 1951, for the whole-time joint appointment of ASSISTANT COUNTY MEDICAL OFFICER AND DEPUTY MEDICAL OFFICER OF HEALTH for the Borough of Buckingham, the Bletchley, Linslade and Newport Pagnell Urban Districts, and the Buckingham, Newport Pagnell and Wing Rural Districts. Salary within the scale of £996–£1354 p.a. Travelling and subsistence allowances will be paid on the appropriate Council's scale. The appointment is superannuable.

Further particulars and forms of application may be obtained from the undersigned, to whom applications must be delivered by 31st March, 1955.

R. E. MILLARD, Clerk of the Bucks County Council.

County Hall, Aylesbury, March, 1955.

DORSET COUNTY COUNCIL require a Senior Medical OFFICER AND SCHOOL MEDICAL OFFICER. Applicants must be registered medical practitioners possessing the Diploma of Public Health. The successful candidate will be given every opportunity of taking part in the general administration of the County Health and Welfare Department, and have administrative control of the Maternity and Child Welfare Section. Salary £1250–£50–£1650 p.a. Travelling allowance.

Application forms from the Clerk, County Hall, Dorchester, to be returned by 26th March.

MANCHESTER. CITY OF MANCHESTER EDUCATION COMMITTEE. Applications are invited for appointment as MEDICAL OFFICER in the School Health Service with half-time duties in the Health Department Maternity and Child Welfare Section. Salary scale £950–£50–£1300.

Application form and particulars (stamped foolscap envelope) from Acting Chief Education Officer, P.O. Box 480, Education Offices, Deansgate, Manchester, 3, to be returned by 31st March, 1955.

MIDDLESBROUGH EDUCATION COMMITTEE. Applications are invited from registered medical practitioners for appointment as SCHOOL MEDICAL OFFICER AND ASSISTANT MEDICAL OFFICER OF HEALTH at a salary of £950 p.a. by annual increments of £50 to a maximum of £1300. The main duties are in connection with the School Health Service, but the person appointed will require to be available for service in any branch of the Council's Health Service. The appointment is superannuable.

Form of application and conditions may be obtained from the Director of Education, Education Offices, Woodlands-road, Middlesbrough, to whom completed forms should be returned not later than 30th March, 1955. E. C. PARR, Town Clerk.

NORTHUMBERLAND. COUNTY OF NORTHUMBER-LAND. Combined appointment of AREA EXECUTIVE MEDICAL OFFICER for the North No. 1 and 2 Areas and MEDICAL OFFICER OF HEALTH for the Urban Districts of Alnwick and Amble, and the Rural Districts of Alnwick, Glendale, and Rothbury. Applications are invited from registered medical practitioners for the above combined appointment. The North No. 1 and 2 Areas comprise the County Districts named together with the Borough of Berwick-upon-Tweed and the Rural Districts of Belford and Norham and Islandshires. The salary for the appointment will commence at £1357 3s. 9d. and rise by 3 annual increments of £53 18s. 2d. and 1 of £61 11s. 3d. to £1580 9s. 6d., plus a travelling allowance in respect of a motor-car not exceeding 12 h.p. The person appointed will be required to give his, or her, whole time to the duties of the appointment and must not engage in private practice. The appointment is subject to the provisions of the Local Government Superannuation Acts, to the national conditions of service and to 3 months notice in writing on either side, and the successful candidate will be required to pass a medical examination.

Further particulars are shown on the application form, copies of which may be obtained from the Clerk of the County Council, County Hall, Newcastle upon Tyne, 1, to whom applications must be submitted not later than 29th March, 1955.

GLAMORGAN EDUCATION AUTHORITY. Rhondda URBAN DISTRICT COUNCIL—COMMITTEE FOR EDUCATION. Applications are invited from registered medical practitioners for appointment as ASSISTANT MEDICAL OFFICER, under the supervision of the District School Medical Officer at a salary of £950 p.a. rising by annual increments of £50 to £1300 p.a. Preference will be given to candidates holding the D.P.H. or D.C.H. and experience in pædiatrics will be an advantage. The appointment is superannuable and the successful candidate will be required to pass an examination as to physical fitness. The successful candidate, if in need of housing accommodation and not already a resident of the Rhondda Urban area, may be offered the tenancy of a Council House.

Forms of application and conditions of appointment may be obtained from the District School Medical Officer, Tydfil House, Pentre, Rhondda, by whom completed applications should be received as soon as possible.

D. J. JONES, Clerk of the Council.

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—ZANZIBAR. MEDICAL OFFICER required for general medical and public health duties in Zanzibar. Appointment can be made on a permanent basis with pension (non-contributory) at the age of 45–55, or on short-term contract with gratuity (taxable) on satisfactory completion of service. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights during their time in Zanzibar (up to 6 years) and receive a taxable gratuity of 20% of the aggregate of their Zanzibar salary after the end of their engagements. Salary scale ranges from £1116 to £1836 p.a. A temporary (non-pensionable) cost-of-living allowance of from £111 to £162 p.a., according to salary, is also payable. Starting salary will be determined according to qualifications and experience. Furnished quarters are provided at low rental. Free passages are provided in both directions for officer and family up to a cost of 3 adult passages. Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour of from 2 to 3 years. Educational facilities are available in East Africa. Candidates must possess medical qualifications registrable in the United Kingdom. They must be prepared to train medical and health staff. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in other territories in medical administration or, if they possess higher qualifications and suitable experience, in Specialist posts.

Application forms can be obtained from the Director of Recruitment Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/10/01).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—TRINIDAD. PATHOLOGIST required in Medical Department, Trinidad, to assist the Senior Pathologist in Pathological and Bacteriological work, including anatomy and post-mortem work. Appointment can be made on a permanent basis with pension (non-contributory) at age of 60, or on short-term contract with gratuity (taxable) on completion of satisfactory service. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights up to 6 years and receive a gratuity (taxable) of 20% of the aggregate of their salary after their engagement. Salary scale is $6720–$7200 (£1400–£1500) a year; 1 dollar equals 4s. 2d. Quarters are not provided, but an allowance is payable towards the rental of a private house. Free passages provided for Officer, wife and children, not exceeding 5 persons in all on first appointment, and up to 3 adult fares on leave. Income-tax at local rates. Tour of service is 3½ years. Generous home leave. Candidates must possess medical qualifications registrable in the United Kingdom and preferably possess a high qualification in pathology or bacteriology. Candidates should also have had at least 3 years postgraduate experience. Those candidates without a D.C.P. or Dip. Bact. should have had at least 6 years postgraduate experience.

Application forms from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/38/013).

LANCASHIRE COUNTY COUNCIL. Registered medical practitioners required for appointment of ASSISTANT DIVISIONAL MEDICAL OFFICERS in areas adjacent to Blackburn, Bolton-Bury, Lancaster, Leigh and Middleton. Possession of D.P.H. desirable. Salary £950–£1300 p.a. Travelling and subsistence allowances where applicable.

Application forms and further particulars from County Medical Officer, Serial 30, East Cliff County Offices, Preston.

PRISON COMMISSIONERS require full-time Medical Officers in Prison and Borstal Service (England and Wales). Work includes general medical attention of all prisoners and inmates. Making psychiatric assessments, the provision of medical and psychiatric reports and giving evidence in court are important aspects of the work. Surgical and Psychotherapeutic Units are established at selected centres. Candidates must have attained age of 28; must be fully qualified and registered and should possess sound knowledge of medical and surgical practice; preference given to those who have post-graduate experience in psychological medicine and possession of D.P.M. considered an advantage. Salary £1500–£75–£1800–£100–£2100 (minimum linked to age 35, minus £50 for each year below that age and plus 1 increment for each year above that age but not exceeding 40). Rates are subject to deduction for posts outside London. Salaries of £1500 p.a. and below attract pay supplement of £35 p.a. Appointments are unestablished in first instance but opportunity for establishment through Civil Service Commission later. Unfurnished quarters when available are provided at moderate rental.

Application forms and regulations from B.Y.1114, Appointments Officer, Ministry of Labour and National Service, 1–6, Tavistock-square, London, W.C.1, returnable by 2nd April, 1955. No original testimonials should be forwarded.

EAST HAM. COUNTY BOROUGH OF EAST HAM. DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER. Applicants must be medical practitioners not more than 45 years of age with a Diploma in Sanitary Science, Public Health or State Medicine, and considerable clinical and administrative experience in public health and school medical work. Salary £1166 13s. 4d.–£50–£1416 13s. 4d. p.a.

Further particulars and form of application returnable by 31st March, 1955, from Town Clerk, Town Hall, East Ham, E.6.

LEEDS EDUCATION COMMITTEE. Applications are invited from duly qualified Male medical practitioners for appointment as SCHOOL MEDICAL OFFICER. The officer appointed will work under the direction of the Principal School Medical Officer who is also Medical Officer of Health. He will be required to perform such other duties as the Council may from time to time determine. The salary scale is from £950 by £50 to £1300 a year. Commencing salary determined in accordance with experience. The post is superannuable and the person appointed will be required to pass a medical examination. The officer will be restricted from engaging in private practice.

Forms of application may be obtained from the undersigned and must be returned within 14 days from the appearance of this advertisement. Canvassing in any form, either directly or indirectly, will be a disqualification.

GEORGE TAYLOR, Chief Education Officer.

Calverley-street, Leeds, 1.

BERMUDA. A vacancy will occur in June for a PSYCHIATRIST to take charge of a Mental Hospital of 150 Beds, advise on schools and other Government responsibilities. Consulting private practice permitted. Specialist qualifications and experience essential, higher medical qualifications desirable. Salary £2000. No income-tax.

Apply Director of Health Services, Bermuda.

VIRGINIA, U.S.A. Required, Physicians—Junior, Staff, Chiefs of Service. Salary ranges of $7880–$9168, depending upon experience. Excellent opportunities for advancement. 4500-Bed Mental Hospital. Convenient to Richmond, Virginia, and Washington, D.C. Some housing available.

Send résumé to: Superintendent, Box 271, Petersburg, Virginia.

Hospital Services: Non-Medical Appointments

SOUTH AFRICA. PROVINCIAL ADMINISTRATION OF THE CAPE OF GOOD HOPE. HOSPITALS DEPARTMENT. HOSPITAL BOARD SERVICE: Vacancy.

1. Applications are invited from suitably qualified applicants for appointment to the following vacant post at Groote Schuur Hospital, Observatory, Cape Town:—

TECHNICIAN (grade B) (E.E.G.—Radiological Department) with salary on the scale £660–£30–£750–786 p.a.

2. In addition to the salary indicated a cost-of-living allowance at rates prescribed from time to time by the Administrator is payable. The present rate is £234 for married male officials and employees.

3. Conditions of service are prescribed in terms of Hospital Board Service Ordinance No. 19 of 1941, as amended, and the regulations framed thereunder.

4. Candidates must be qualified Radiographers and must be able to perform electro-encephalographic duties.

5. The successful applicant will be required to submit satisfactory birth and health certificates and his/her appointment will be subject to the following conditions:—

(i) Appointment will be on contract for 5 years in the case of a citizen of a Commonwealth country or the Republic of Ireland and 6 years in the case of a citizen of European countries other than the United Kingdom and the Republic of Ireland.

(ii) Transport expenses (third class by rail overseas and second or cabin class steamship fare and first class by rail in the Union) necessarily incurred by the successful applicant from place of residence to the place of assumption of duty in South Africa, will be defrayed by the Administration provided that, if the contract is broken within 1 year of the date of assumption of duty the person appointed must refund to the Administration the full amount paid in respect of transport expenses and if the contract is broken within 5 years of the date of assumption of duty in the case of a Commonwealth citizen and 6 years in the case of a citizen of another European country, the person appointed shall refund to the Administration the pro rata share of the full amount above referred to in respect of the unexpired period.

(iii) The person so appointed will be offered permanent appointment during the term of contract but not earlier than 3 years from the date of assumption of duty or with effect from the conclusion of the contract, provided he has passed an examination in Afrikaans as second language, which examination shall not be lower than the standard required for the Junior Certificate Examination of the Department of Education of this Province and provided further that his services and conduct during the period of contract are satisfactory and his state of health is such as will enable him to continue to discharge efficiently all the duties of the post in which he will be employed.

6. Application must be made on the prescribed form, Staff 23, which is obtainable from the Staff Clerk, Room 102, South Africa House, Trafalgar-square, London, W.C.2.

7. The completed application forms must be addressed to the Director of Hospital Services, P.O. Box 2060, Cape Town, South Africa, and must reach him not later than 5th April, 1955.

8. Candidates must state the earliest date on which they can assume duty.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

Imperial Chemical Industries Limited has vacancies for:—

(1) A young woman Honours graduate who has specialised in Zoology or possibly Microscopic Botany. The appointment will be concerned with Histopathological work in connection with Chemotherapeutic Research.

(2) A Biochemist with Ph.D. or equivalent research training and under 30 years of age who will be required to conduct research in the field of Chemotherapy.

The Company's Research Laboratories are at present situated in the North Manchester area but new Laboratories are now in the course of erection in a rural area about 20 miles South of Manchester.

Applications with full particulars should be addressed to the Staff Manager, Imperial Chemical (Pharmaceuticals) Limited, Fulshaw Hall, Wilmslow, Manchester.

Plastic Surgeon wanted, well qualified and trained, who would be interested in immigrating to the United States and taking out citizenship papers. To be associated with a large mid-western plastic surgery Clinic. Guaranteed minimum of $10,000 per year net. For right person, $25,000 net income with 2–3 years is assured. Must spend 6 months in Rotating Internship to fulfil requirements for State Laws. Private practice devoted entirely to plastic surgery—growing rapidly. Senior partner retiring. Write all particulars, including references and type and extent of general surgical training and when you would be available.—Address, No. 105, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Institute of Child Psychology Ltd., 6, Pembridge-villas, London, W.11. Applications invited for Child Psychiatrist. 2 sessions weekly for clinical work and postgraduate teaching. Candidates must have D.P.M. and experience of Child Guidance work. Salary on Senior Hospital Medical Officer scale.—Apply to the Secretary.

Medical Publishers in London have an opening on their editorial staff for a young Doctor. The appointment is full time. A few years general medical experience essential; knowledge of editorial work an advantage. Pension scheme.—Apply, giving full particulars, to: Address, No. 112, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Young Man seeks post as Medical Artist and/or Anatomical Model Maker. Specimens and references.—G. W. COCHRANE, 13, Queen's-drive, Waltham Cross, Herts.

Wanted, experienced Pathologist for service at Princess Tsahai Memorial Hospital, Addis-Ababa, Ethiopia. 3-year contract with possibility of renewal. Salary £178 monthly, plus furnished accommodation.—Apply, 18, Egerton-terrace, S.W.3.

Wanted, experienced Radiologist for service at Princess Tsahai Memorial Hospital, Addis-Ababa, Ethiopia. 3-year contract with possibility of renewal. Salary £142 monthly, plus furnished accommodation.—Apply, 18, Egerton-terrace, S.W.3.

Wanted, experienced Radiographer for service at Princess Tsahai Memorial Hospital, Addis-Ababa, Ethiopia. 3-year contract with possibility of renewal. Salary £78 monthly, plus furnished accommodation.—Apply, 18, Egerton-terrace, S.W.3.

Wanted, qualified Matron and Assistant or man and wife to run private home for mentally handicapped children (30 Beds), South Manchester district. Full Whitley scale wages.—Write, giving full particulars, to: Address, No. 113, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Consulting-rooms, full and part time, and Houses in the medical area.—ELGOOD & Co., 1, Bentinck-street, W.1 (WELbeck 8974).

Becoming vacant. Drs. serviced, equipped, well-furnished Consulting-rooms. Use of small Surgery. Terms arranged.—14, Herbert House, Herbert-crescent, Knightsbridge (SLOane 8014).

Frinton-on-Sea. For Sale, well-appointed freehold house. Ideal for Convalescent or Nursing home. 10 bedrooms, 3 bathrooms, excellent reception-rooms, central heating, &c.—Apply, SIMON, 1/3, Newton-street, W.C.2 (Tel. HOLborn 7221).

For Sale. 1 Protector Bed Pan Washer with urine bottle jet with hot and cold water connections. Can be seen at The Armitage, 107, Marine-parade, Worthing, on application to the Matron.—Telephone: Worthing 5966.

Austin. The New Show Models A.30, A.40, A.50 and A.90. Limited number of deliveries to proven essential users.—Application form, brochures, easy terms from Austin House, 140–144, Golders Green-road, Golders Green, London, N.W.11.

A car for your needs—we can supply new: Standards 8 and 10; Zephyr Convertible; T.R.2; Riley 1½ litre; Morgan Coupe and others.—BASIL ROY LTD., 161, Gt. Portland-street, W.1 (LANgham 7733).

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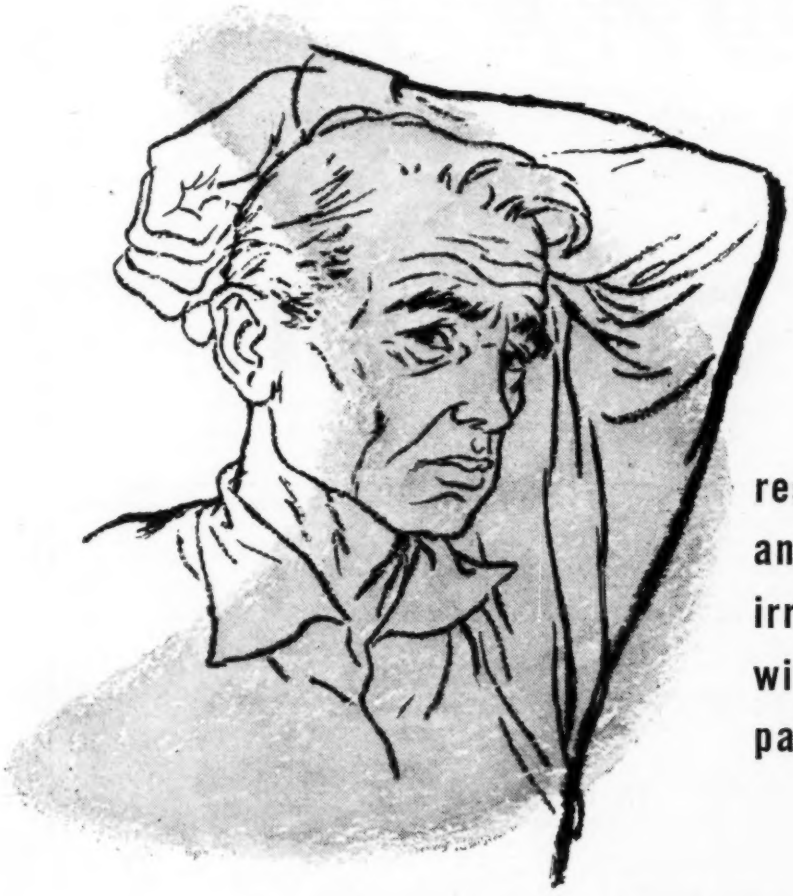

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